Rexnord TableTop and MatTop Chains

Engineering Manual

SAFETY CONSIDERATIONS

Product Safety:

Products designed and manufactured by Rexnord are capable of being used in a safe manner; but Rexnord cannot warrant their safety under all circumstances.

Purchaser must install and use the products in safe and lawful manner in compliance with applicable health and safety regulations and laws and general standards of reasonable care; and if purchaser fails to do so, purchaser shall indemnify Rexnord from any loss, cost or expense resulting directly or indirectly from such failure.

Safety Devices:

Products are provided with only safety devices identified herein. It is the responsibility of the purchaser to furnish appropriate guards for machinery parts in compliance with MSHA or OSHA Standards, as well as any other safety devices desired by Purchaser and/or required by law; and if purchaser fails to do so, purchaser shall indemnify Rexnord from all loss, cost or expense resulting directly or indirectly from such failure.

General Safety Precautions:

- To avoid personal injury, all machinery must be turned off and locked out, prior to chain installation, inspection, maintenance and removal
- Always use safety glasses to protect eyes. Wear protective clothing, gloves and safety shoes
- Support the chain to prevent uncontrolled movement of the chain and parts
- Maintain tools in proper condition and assure their proper use. Use of chain assembly tools is recommended when applicable
- Do not attempt to connect or disconnect chain unless chain construction is clearly known and understood
- Do not re-use any sections of damaged chain because they may have been overloaded and weakened

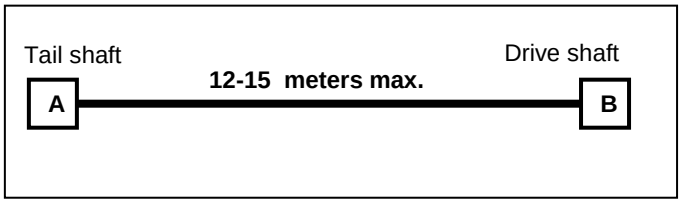
If any flame cutting, welding, etc. is to occur in the conveyor vicinity, take adequate precautions to insure that no burning of any chain or other components occurs. If adequate protection cannot be provided, remove the chain and other plastic components from the conveyor and store in a safe location. Thermoplastic and similar materials can burn and give off toxic fumes.
Do not install, operate or perform maintenance on these products until you read and understand the instructions contained in this manual.

Conveyor Design

Straight running configuration

The length of a conveyor is not unlimited. There is a certain maximum length for each application. The limits are depending on factors like chain- or belt type, lubrication, kind of product, load. The exact maximum conveyor length can be calculated with the readily available calculation program.

Generally for straight running conveyors we recommended a Max. track length of 12 meters.

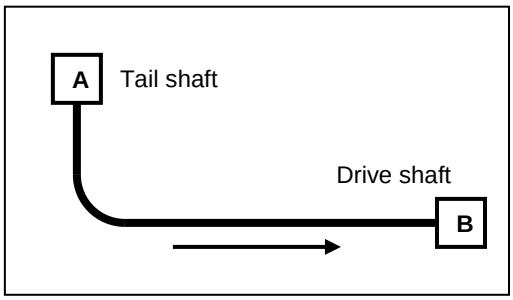


Shorter conveyors are built to obtain lower backline pressure by means of better control facilities. The chain speeds can be controlled using frequency controlled drives. When for instance one conveyor runs full, the chain speed of the preceding conveyor can then slowly be decreased. Pasteurisers, warmers and coolers can require longer track lengths.

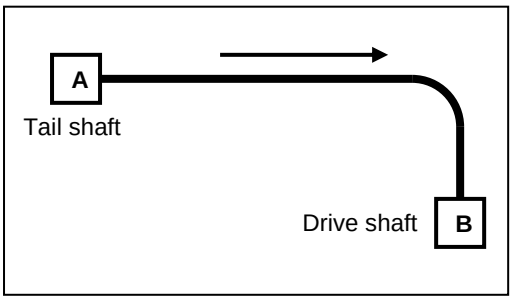
Side flexing configuration

When planning a side-flexing conveyor layout, the designer must consider the following factors that affect chain life:

- Minimize the number of corners whenever possible
- When conveying from point A to point B, design the conveyors so that the drive is positioned furthest from the last corner (see drawing), resulting in lower chain tension and maximizing chain life



Preferred



Avoid

Maximum chain speed slatband chains

Chain material and type	Maximum speed (m/min)		
	Dry	water	Water & soap
Steel chains			
Straight	50	70	130
Magnetflex®	30	40	130
Plastic chains			
Straight run	80	100	180
Sideflex, tab	*) Check PV-limit	60	120
Magnetflex®	*) Check PV-limit	90	180
CC-chains	*) Check PV-limit	60**	80**

*) PV-Limit

Maximum speed values depend on the PV-value of the curve, which represents a combination of pressure and velocity with a specific limit.

****) Contact Technical Support for higher speeds**

Abrasive conditions or exceeding the speed, results in increased wear, and a decrease in working load.

Conveyor Design

Slip stick / Pulsating effects

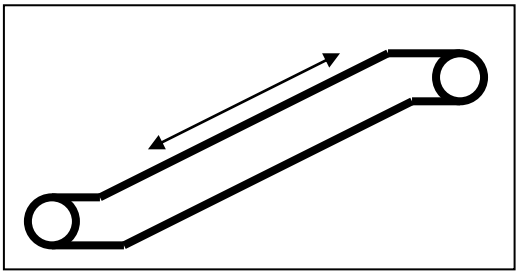
Slip-stick is the changeover from static friction to dynamic friction. Stick-slip can be caused for example by uneven lubrication, long track length, frequency inverters at low frequency or vibrations from the chain return. Slip-stick effects can cause a pulsating chain operation.

We have the experience that with long, low speed conveyors, the chance of a pulsating operation increases.

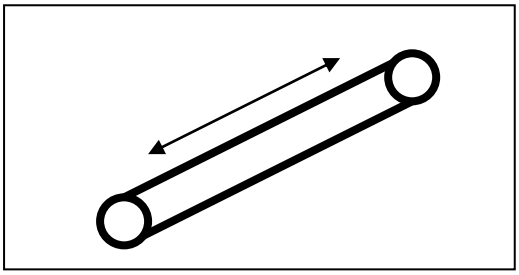
To avoid stick-slip, try to influence the points named above. Please contact application engineering whether you need further help.

Inclining / declining conveyor configuration

Slatband chains can be used on in- or declined conveyors which are basically constructed in the same way as level conveyors. Main concern is to avoid that the products slide down or tip. Conveyors can be constructed with a level in/outfeed section, see below.



Level in/outfeed



No in/outfeed

In case the inclined/declined conveyor is equipped with a Magnetflex curve, we recommend a minimum level section of 1 meter. This eliminates the chance the chain is lifted out of the curve.

Max. possible angle

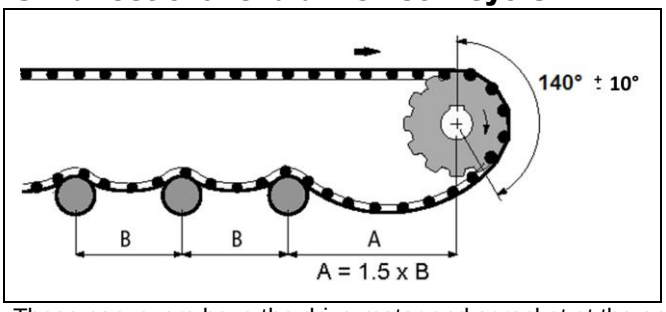
The maximum possible angle is depending on several factors: Coefficient of friction between chain and product; acceleration/deceleration; product stability and external factors like dirt or debris. Below a general table is shown with maximum angles determined by chain friction.

Maximum angles inclines / declines		
Chaintype	**Lubricated**	**Dry running**
Steel chains	4º	8º
Plastic chains	2.5º	4.5º
Rubbertop chains	9º	20º
Variations can vary due to actual circumstances.		

Please contact Application Engineering for further information.

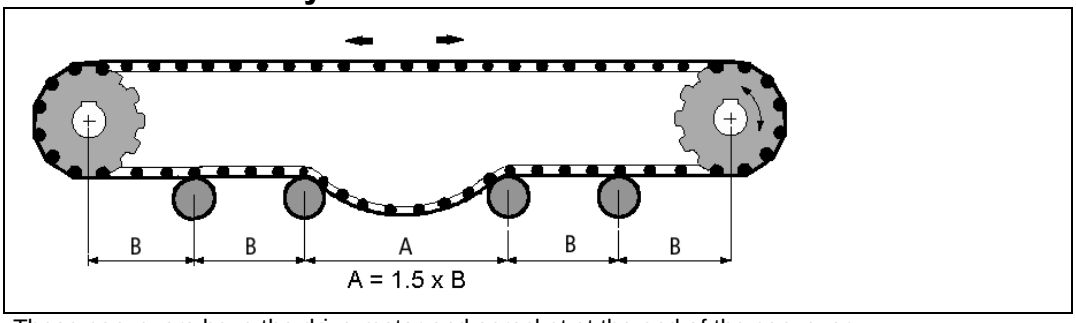
Conveyor Design

Uni-directional end driven conveyors



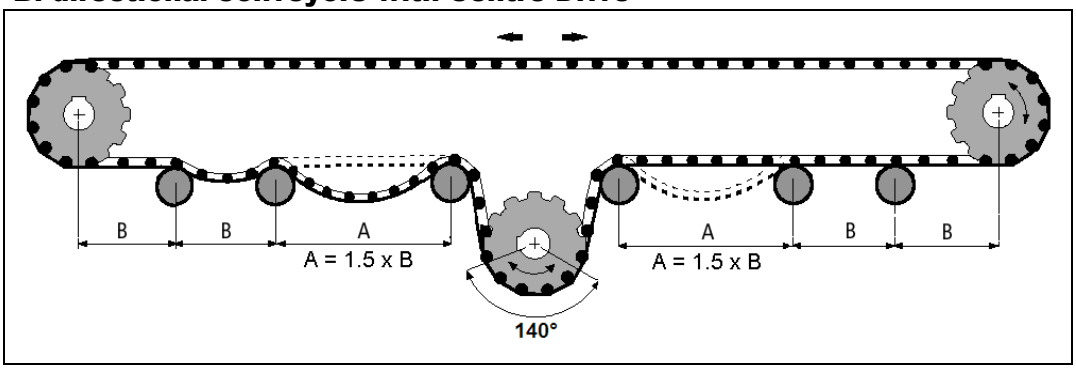
These conveyors have the drive-motor and sprocket at the end of the conveyor

Bi-directional conveyors with End Drive



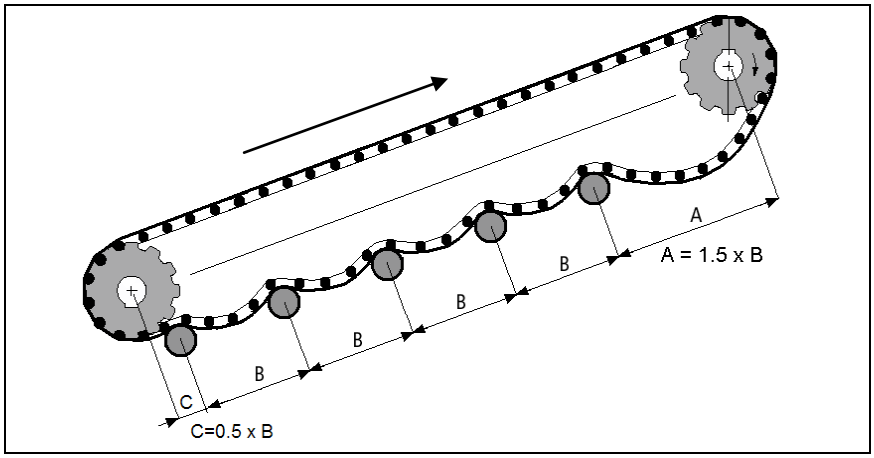
These conveyors have the drive-motor and sprocket at the end of the conveyor

Bi-directional conveyors with Centre Drive



These conveyors can have a small end roller to reduce the transfer area

Drive constructions inclines



Drive constructions declines

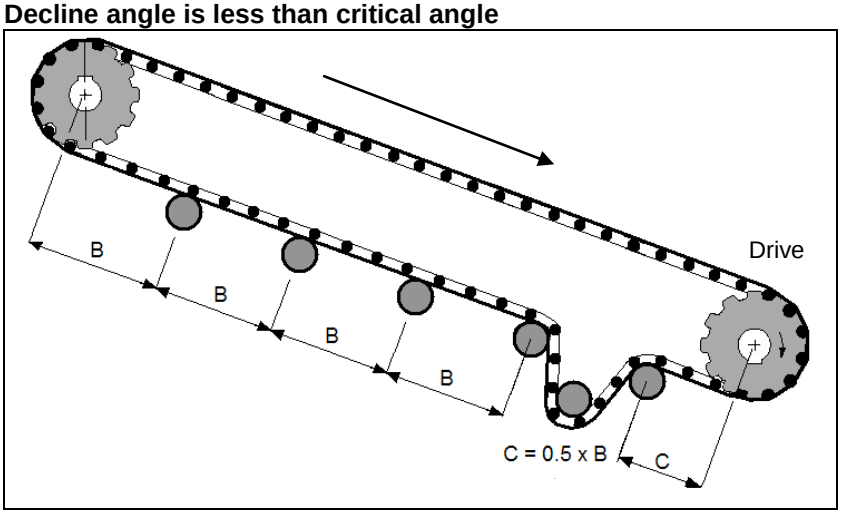
Conveyor Design

Declined conveyors have the drive at the upper- or at the lower side of the conveyer. This position depends on the friction between the chain/belt and the upperpart, and also on the preferred angle of the decline. See explanation below to determine where the position of the drive should be.

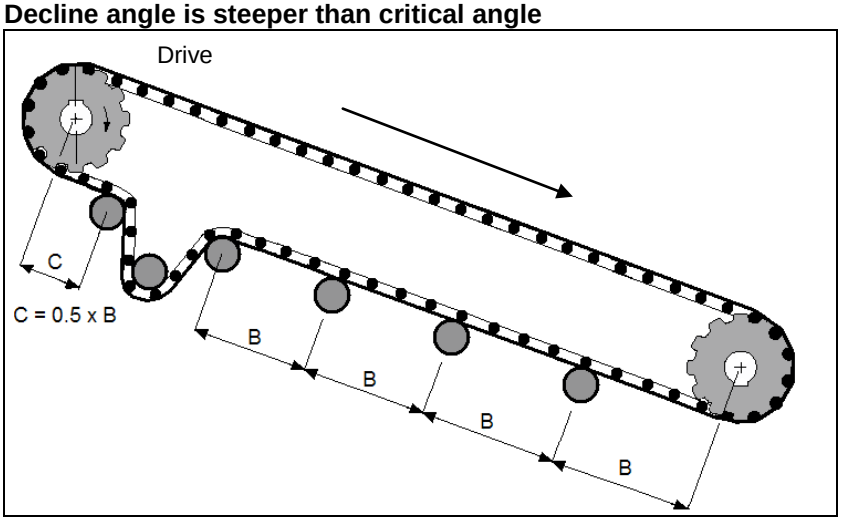
Calculate the critical angle (∠ critical) with:

Tan (∠critical) = Friction between chain - wearstrips

Decline angle is less than critical angle



Decline angle is steeper than critical angle



Please note that a gravity tensioner is recommended for declined conveyors

Most Rexnord chains have a preferred running direction, which is shown on the underside.

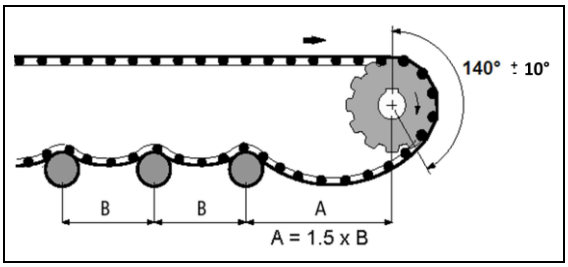
Wrap around angle

Recommended wrap angle on sprockets is: **140° +/- 10°.**
When the wrap angle is too small, the sprocket will not be able to transfer the load to the chain anymore causing the chain/belt to jump on the sprockets. When the wrap angle is too big, the chain/belt can stick to the sprocket.

Conveyor Design

Catenary sag

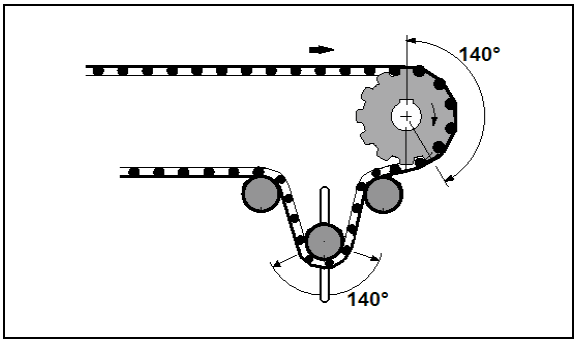
It is recommended to create a catenary sag just behind the sprocket which provides a complete discharge of the chainload and ensures proper running.



type	A (mm)	B (mm)	Vertical sag Y(mm)
Slatband	700	500	50-125
Crate chains	700	N/A[1)]	100-300
LBP-chains	700	400[2)]	50-100
[1)] Use flat returnpart for CC-series chains			
[2)] Use guide shoes/flat return for LBP chains			

The right vertical catenary sag can usually be obtained automatically by just pulling both ends together and mounting them together. Note the chain can elongate due to strain and wear of the pins and hinge eyes. Therefore it is important to check and adjust the catenary regularly.

Tensioner construction

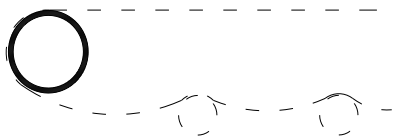
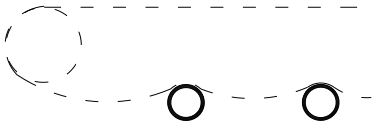


A tensioner construction is only necessary if the conveyor design does not allow a proper catenary sag. A tensioner can also be used with declined conveyors, but in all other cases it is not recommend to tension the chain/belt.

The tensioner roller/sprocket can be fixed on an arm or move up and down in slots in the conveyor sideplates. This will bring constant tension, independent of length differences in the chain.

Please contact our Technical Support whether you need to calculate the weight of a tensioner roller.

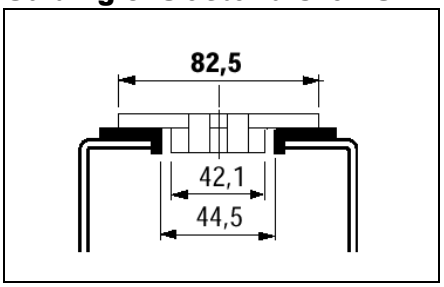
Roller diameter for slatband chains

Chaintype	Slatband chains	LBP chains	CC chains
Idler rollers 	> 100mm	>100mm	100mm
Return rollers 	60-100mm	Guide shoes are recommended	60-100mm
Backflex rollers 	300mm	Not recommended	120mm

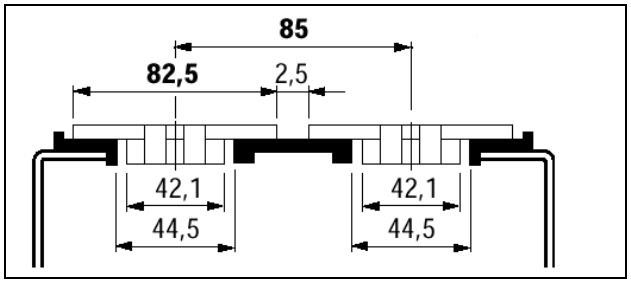
The recommended roller diameters in the table are an indication. The width of the conveyor is not taken into account. The diameter of the shaft should be large enough to avoid deflection of the roller. At the same time it is recommended not to exceed the maximum diameter, because the roller friction may be too high to be set in motion by the belt.

Conveyor Design

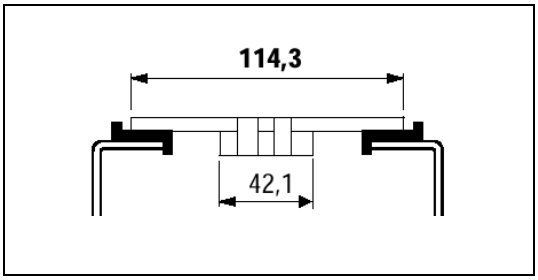
Guiding of slatband chains



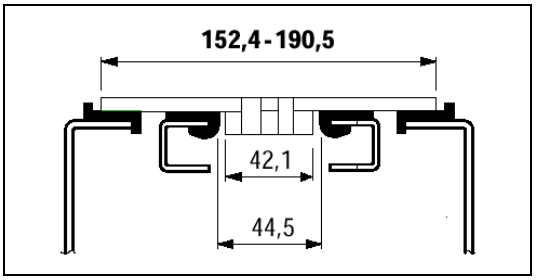
Guiding of single 3.25” chains



Guiding of multiple 3.25” chains

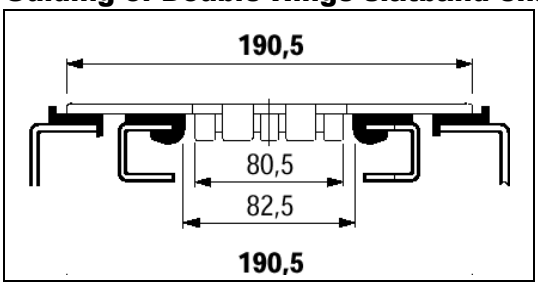


Guiding of 4.5” plastic chains

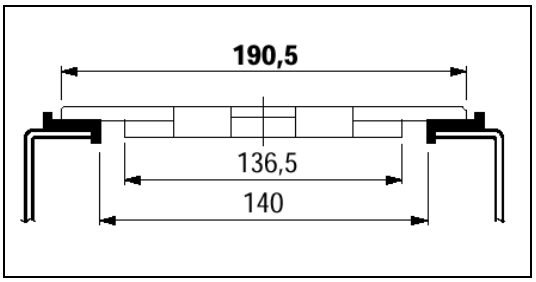


Guiding of 6”-7.5” plastic chains

Guiding of Double Hinge slatband chains

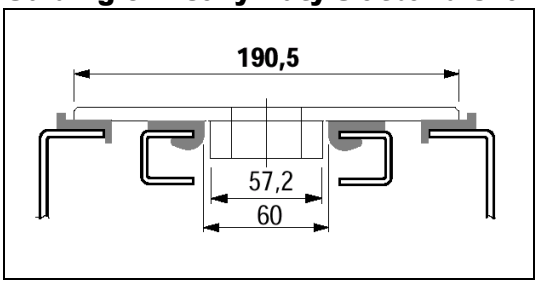


Guiding of stainless double hinge chains

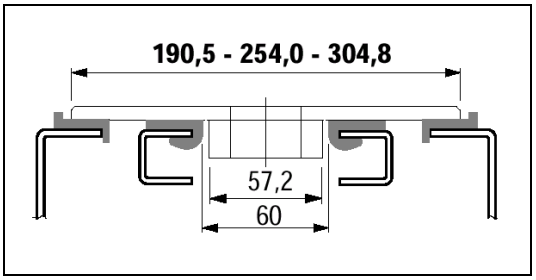


Guiding of plastic double hinge chains

Guiding of Heavy Duty slatband chains



Guiding of stainless Heavy Duty chains



Guiding of Heavy Duty plastic chains

Conveyor Design

Wearstrip Materials

Metal wearstrips

Metal wearstrips can be used in most situations using plastic chains and are strongly recommended in abrasive environments.

Stainless steel:

- Recommended for corrosive, abrasive or high temperature applications
- Abrasive particles are less likely to imbed in metal wearstrips in comparison to plastic
- A cold rolled austenitic grade with a hardness of at least 25Rc is recommended which offers the best corrosion resistant properties
- Hardness is more critical than grade for better wear resistance
- Hot rolled AISI 304 (Werkstoff-Nr. 1.4301) is **not** recommended as wearstrip material.

Plastic wearstrips

Friction is low compared to steel wearstrips. Two types of plastic are suitable to be used as a wearstrip material.

UHMWPE / ULF:

- Most common used wearstrip material with extreme low friction;
- Excellent resistance against many chemicals;
- Virtually no moisture absorption, therefore very suitable for lubricated lines;
- Good dimension stability;
- Reduces some of the noise conveyors produce;
- Suitable for dry running conveyors with speeds up to 100 m/min (ULF) or up to 60 mtr/min (UHMWPE);
- Recommendation: RAM-Extruded UHMWPE (see page EM-TT-08) or Rexnord ULF.

Polyamide:

- Only suitable for dry applications
- Relatively high moisture absorption which makes the material expand;
- Polyamide is also used with additives to reduce the coefficient of friction;
- Suitable for dry running high speed conveyors.

Recommended wearstrip materials

Wearstrip material	Steel chains		Plastic chains	
	Dry	Lubr.	Dry	Lubr.
UHMWPE / ULF	+	+	+ [1)]	+ [2)]
Polyamide	+/-	-	+/-	-
Stainless steel	-	-	+	+

\+ Recommended
+/- Satisfactory
\- Not recommended
[1)] Up to 60 m/min in non abrasive conditions
[2)] Only in non abrasive conditions

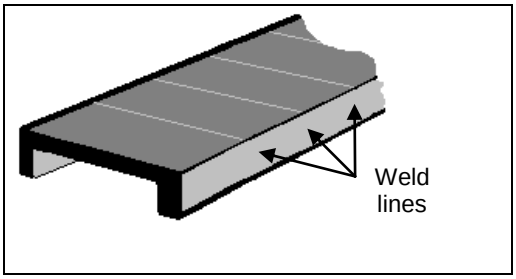
It is not recommended to use the same material for the wearstrip and chain.

UHMWPE Wearstrip Installation

RAM-extruded wearstrips

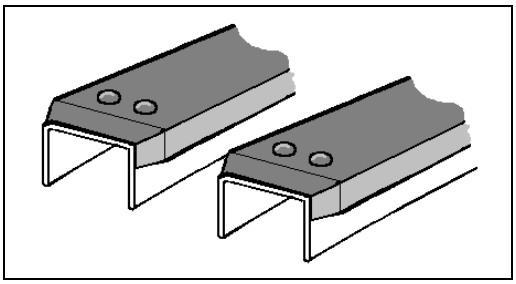
We recommend to use RAM-extruded wearstrips. Main benefits of RAM-extruded UHMWPE wearstrips is that less debris will embed in the material in comparison to worm extruded or machined UHWMPE. This will results in less chain / belt wear.

Ram-extruded wearstrips can be recognized by weld lines which occur with each ram stroke, see drawing.



Chamfering of wearstrips

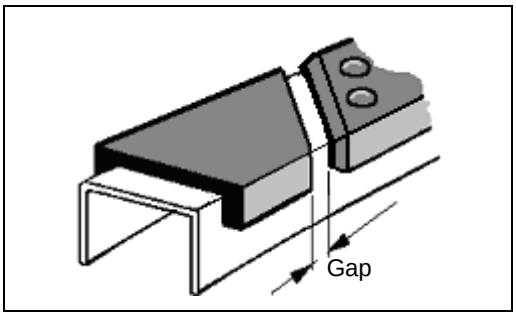
Wearstrips should always be chamfered at the beginning of the strip where they are fixed. Chamfering reduces the risk of chain-obstruction resulting in a smooth operation. The wearstrips should be chamfered at the sides and at the top.



Splitting the wearstrips

On straight sections with a length of more than 3 meters, or for high (40º - 70ºC) application temperatures, we recommend to divide the wearstrip into several sections, because of the thermal expansion of the strips.

It is recommended to cut the wearstrips at 45º angles to provide smooth chain/ belt transfers. Make sure only the infeed side of the wearstrip is fixed to the conveyor frame to avoid bulging of the wearstrips.



The gap depends on the expected elongation due to e.g. thermal expansion, see drawing.

Calculation example

For Marbett RAM-Extruded UHMWPE material the expansion coefficient is 0.2 mm/m/ºC.
A temperature increase of 20ºC would elongate a 3 meter wearstrip with:

20ºC * 3mtr * 0.2=12 mm

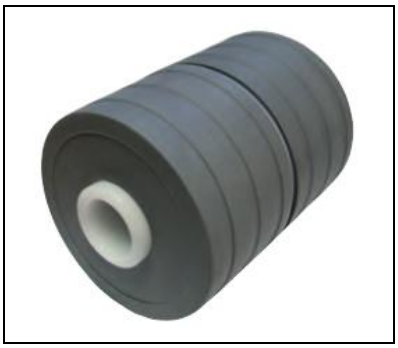
In this case, the gap between the wearstrips should be a bit larger than 12 mm.

We recommend a maximum wearstrip length of 6 meters with UHWMPE wearstrips.

Conveyor Design

Chain return construction

Rubberized rollers



+ Reduced wear
+ Simple construction.
+ Good accessibility
+ Noise reduction
+ Higher friction between chain and roller ensures free rotation of the rollers

– Only point contact between chain and roller.

Rotating rollers

+ Reduced wear
+ Simple construction.
+ Good accessibility
+ Ejection of debris in the returnpart by the movement of the chain.

– Only point contact between chain and roller.
– Small rollers may cause a rattling sound.

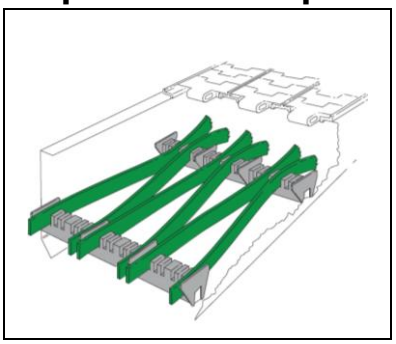
Fixed guide shoes

+ Good accessibility
+ Simple construction.
+ Ejection of debris in the returnpart by the movement of the chain.
+ Required for LBP chains/belts.

– Risk of uneven wear chain surface
– Only point contact between chain and guide shoe.
– High friction.

Minimum guide shoe radius is 200 mm.

Serpentine wearstrips



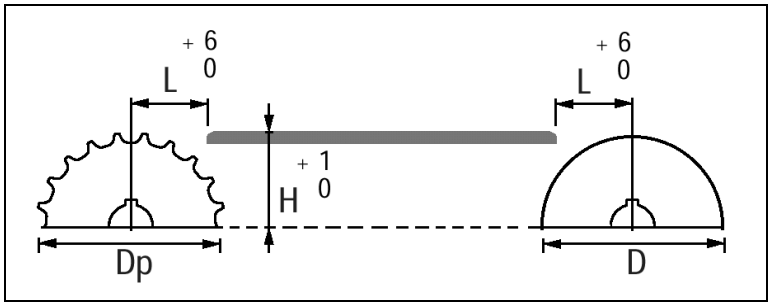
+ Full support of the chain over the length of the conveyor.
+ Reduced noise in returnpart.
+ Recommended in high speed lines with slatband chains

– Less favorable accessibility for maintenance.
– Less possibility to absorb elongation.
– Uneven wear of the chain/belt when not supported over entire width.
– Higher friction.

Material used for wearstrips should be UHMWPE.
A roller can be used for the infeed onto the serpentine wearstrips

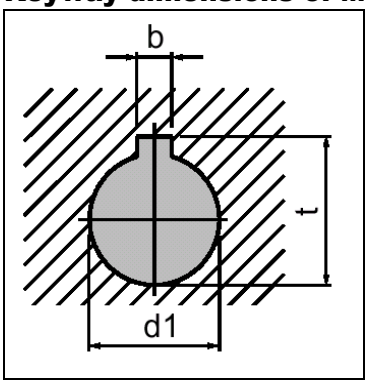
Position sprocket - wearstrips

When the chain enters the sprocket, it tends to raise and fall slightly (chordal action). For this reason the sprockets should be mounted in such a way that its highest point is no higher than the top of the wearstrips. The frond edges of the wearstrips should bevel to allow smooth and free running of the chain. The distance from the end of the wearstrip to the sprocket shaft centerline should equal dimension L, otherwise the wearstrip will interfere with the free articulation of the chain as it enters the sprockets.



Chain type	Drive sprocket H (mm)	L mm	Idler Drum H (mm)	L mm
Steel chains 1.5" pitch SH, SWH, 820, 821	$\frac{Dp}{2}$ + 3.2	38.1	$\frac{Dp}{2}$	38.1
Steel chains 661	$\frac{Dp}{2}$ + 2.0	25.4	$\frac{Dp}{2}$	25.4
SHD, 831	$\frac{Dp}{2}$ + 2.4	38.1	$\frac{Dp}{2}$	38.1
SHP, SRH, RH(D), 880, RHM, RHMP,	$\frac{Dp}{2}$ + 3.5	38.1	$\frac{Dp}{2}$	38.1
RHMD, RHMDP, 879,	$\frac{Dp}{2}$ + 2.8	38.1	$\frac{Dp}{2}$	38.1
HDS, HDF, HDFM, 882, 883	$\frac{Dp}{2}$ + 4.7	38.1	$\frac{Dp}{2}$	38.1
1757	$\frac{Dp}{2}$ + 13.5	38.1	$\frac{Dp}{2}$	38.1
1775 ZeroGap	$\frac{Dp}{2}$ + 14.3	25.4	$\frac{Dp}{2}$	25.4
1785 ZeroGap	$\frac{Dp}{2}$ + 11.0	48.0	$\frac{Dp}{2}$	48.0

Keyway dimensions of MCC sprockets



d1 (mm)	b (mm)	t (mm)
25mm	8	28.3
30mm	8	33.3
35mm	10	38.3
40mm	12	43.3
45mm	14	48.8
50mm	14	53.8
60mm	18	64.4

d1 (inch)	b (inch)	t (inch)
1"	1/4	1 1/8
1 1/4"	1/4	1 3/8
1 1/2"	3/8	1 9/16
1 3/4"	3/8	1 15/16
2"	1/2	2 1/4

Conveyor Design

Shafts

In all situations stainless steel is recommended for shaft material. Metaloxydes that come from a rusty shaft are extremely abrasive and would therefore reduce the life of the conveyor components. It is also important to use shafts with a sufficient hardness and a smooth surface. The shaft diameter depends on the conveyor load and its width. For slatband chain sprockets round shafts are used.

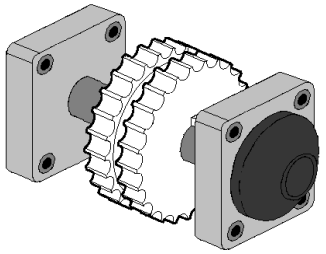
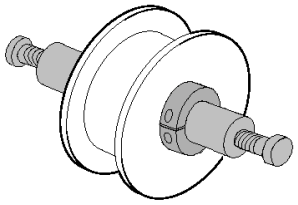
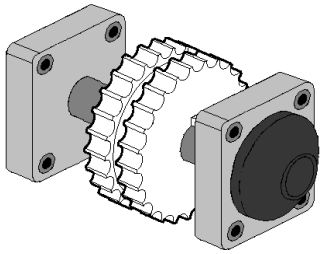
Maximum deflection of the shaft must not exceed 2 mm. Depending on the load and length of the shaft, it can be necessary to use a larger diameter shaft or an extra bearing in the middle of the shaft to reduce the shaft deflection.

Shaft tolerances

It is important that the tolerance of the shaft meets the specifications of the sprocket, so the sprocket can slide over the shaft at all times. In combination with all MCC sprockets the following shaft specifications are required, depending on the shaft diameter.

Dimension (mm)	Shaft tolerance (mm)	Idler shaft surface finish (µm)
Round shaft		
< Ø 90	max h 9 (ISO)	0.8
> Ø 90	Max h 11 (ISO)	1.2

Bearings

Drive sprocket	Idler	
	drum	sprocket
		
Shaft with keyway equipped with bearings	Fixed idler shaft without keyway. The idler drum rotates freely on the shaft. Suitable for lower speed < 30mtr/min dry run < 60mtr/min well lubricated	Idler shaft with keyway equipped with bearings for higher conveyor speed > 30mtr/min dry run > 60mtr/min well lubricated In polluted areas an idler shaft with bearings is recommended.

Before selecting bearings, check which chemicals will be present. Also check if dust and water are present. Sealed bearings have a better protection against dust. Also use bearings with high mechanical and heat resistance for a longer life of the construction.

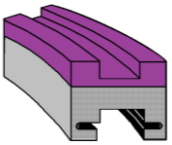
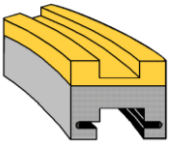
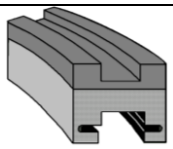
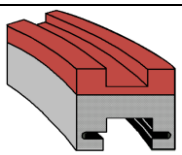
Make sure the edges of the shaft are rounded off to ease assembly and to avoid damage to the rubber parts of the bearing sealing units.

Fix sprockets with lowest speed

When the speed of the idler sprockets on the same shaft is different, we recommend fixing the sprocket with the lowest speed to the shaft. This way the relative speed difference which occurs between the shaft and the other idler sprockets is as low as possible and the fixed idlers will not drive the slower moving idlers. This case all other idler sprockets must be able to rotate independently.

Magnetflex® curve materials

Magnetflex® curves are available in several materials, each for specific applications, see below.

Curve	Color	Properties & Applications	Notes
Combi A ***MCC 1200***		High grade UHMWPE for good wear and abrasion resistance. Suitable for most applications with steel and plastic chains.	Lubricated or dry running
Combi G ***MCC 2000***		Special UHMWPE with ceramic additives for superior abrasion resistance For abrasive conditions with stainless steel chains	Lubricated or dry running
Combi S ***MCC 3500***		Special polyamide for high PV limits and optimum wear resistance. Suitable for dry running high speed conveyors equipped with plastic chains. Also suitable for abrasive conditions.	Dry running only
Combi X ***MCC 5000***		New hybrid construction with high performance ULF-material ensures high wear resistance and very low friction. For dry and lubricated applications with plastic and stainless steel chains.	Lubricated or dry running
Return part material is MCC 1001 UHMWPE, return guide shoe material is MCC 1000 UHMWPE			

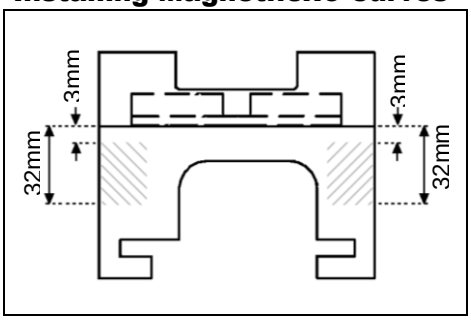
	APPLICATION						
CURVE MATERIAL	Lubricated, clean, stainless steel chains, plastic chains	Lubricated, abrasive, stainless steel chains	Lubricated, abrasive, plastic chains	Dry running, low speed, abrasive, steel chains	Dry running, low speed, clean, plastic chains	Dry running, high speed, clean, plastic chains	Dry running, high speed, abrasive, plastic chains
Combi-A							
Combi-G							
Combi-S							
Combi-X							

Conveyor Design

Curve installation

For Magnetflex® curves, the following installation recommendations should be taken into account.

Installing Magnetflex® curves

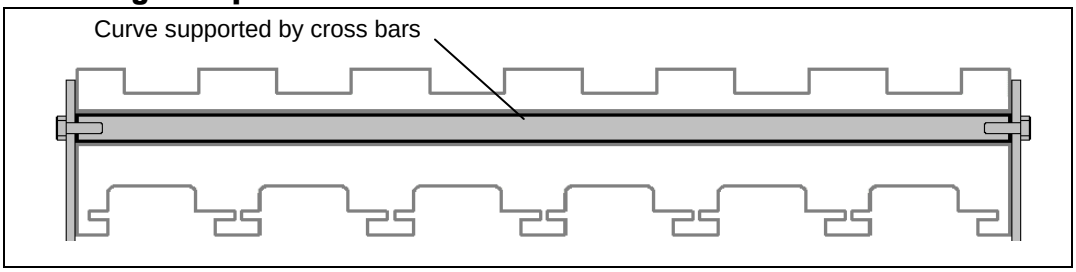


Magnetflex® curves are mounted to the conveyor frame using inserts in the curve returnpart. The upperpart is fixed to the returnpart with screws.

It is important to take care of the position of the inserts. Magnetflex® curves should only be drilled in the underpart, taking the dimensions into account shown in the drawing.

Note: Always check returnpart for protruding bolts, which could obstruct the chain.

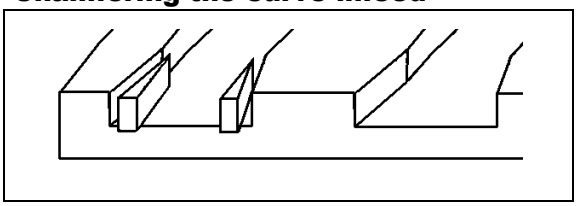
Installing multiple track curves



For multiple track curves (>500mm) we recommend to support the curve upperpart and the curve returnpart with cross bars.

Note: make sure the curve is mounted level, and the conveyor frame is positioned level

Chamfering the curve infeed

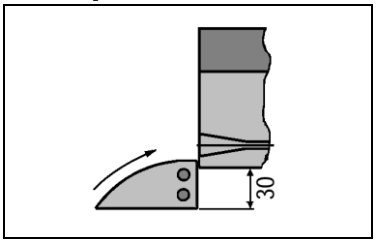


All upperpart infeed sides should be chamfered to ensure a smooth running of the chains. Make sure the chamfered parts stay vertical. The chamfering of the curves has to be done only at the infeed sides.

Magnetflex® guide shoe installation

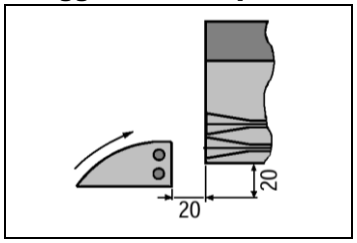
The MCC return guide shoes helps the chain run into the returnpart. The return guide shoe has to be mounted at the infeed side of the return part of the curve.

Returnpart at same level



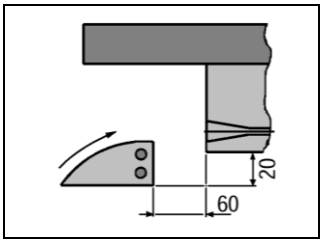
Returnpart guide shoe should be mounted against infeed of underpart, with underside of the guide shoe 30 mm lower than the curve underside.

Staggered returnpart



Curves with a track pitch of less than 89 mm, feature a staggered returnpart. Returnpart should be mounted 20 mm off the curve infeed.

1050/1055 chain belts



The infeed shoe should be positioned 20 mm below the curve infeed, at distance of 60 mm.

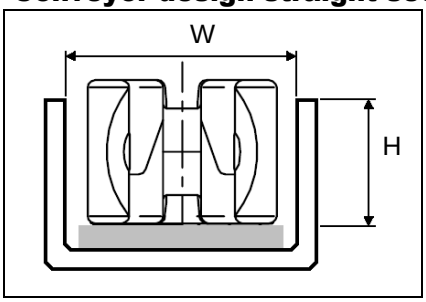
Case Conveyor chains

Case conveyor chains are available in different types. Plastic Case Conveyor chains have been designed to convey heavy crates, boxes and kegs and the open design is very suitable for dirty conditions and easy cleaning.

Properties	CC600	CC631	CC1400	CC1431
Pitch [mm]	63.5	63.5	83	83
Max. working load [N]	3950	3950	6500	6500
Tabs	with/without	with	with/without	with
Height of links [mm]	28.6	31.8	38	43

Note: CC-chains have a preferred running direction, which is indicated on the chains. The pins can be mounted only in one direction ("in") and dismounted only one direction ("out"). CC-chains should not be tensioned in the returnpart.

Conveyor design straight sections

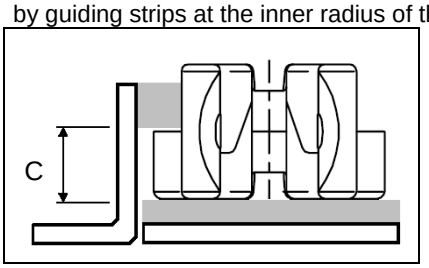


Chaintype	W (mm)	H (mm)
CC600	45	20
CC600TAB	58	20
CC631TAB	58	20
CC1400	53	24
CC1400TAB	69	24
CC1431	69	24

Please check wearstrip recommendations for best wearstrip choice. The wearstrips should have open slots to allow dirt and debris to fall down.

Conveyor design corners

Curves for CC chains should be made open to allow debris to fall down. The chains can be secured by guiding strips at the inner radius of the curve.



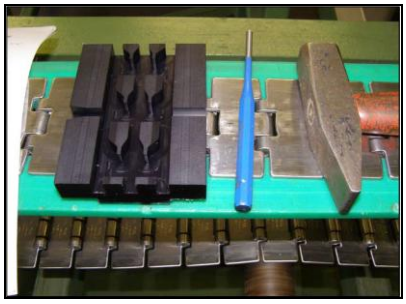
Chaintype	C
CC600TAB	19.5
CC631TAB	19.5
CC1400TAB	21
CC1431TAB	21

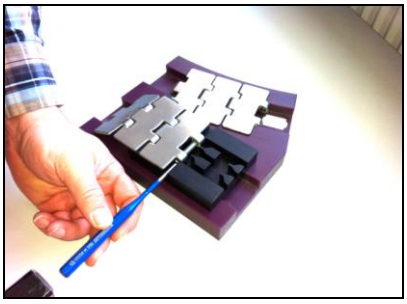
Please check wearstrip recommendations for best wearstrip choice

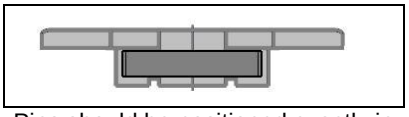
Conveyor Design

Installation of slatband chains

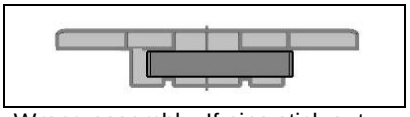
- Chains can be installed using **Rexnord chain tool**, hammer and a punch.







Pins should be positioned exactly in the middle of the hinge eyes.



Wrong assembly. If pins stick out the chain can jam.

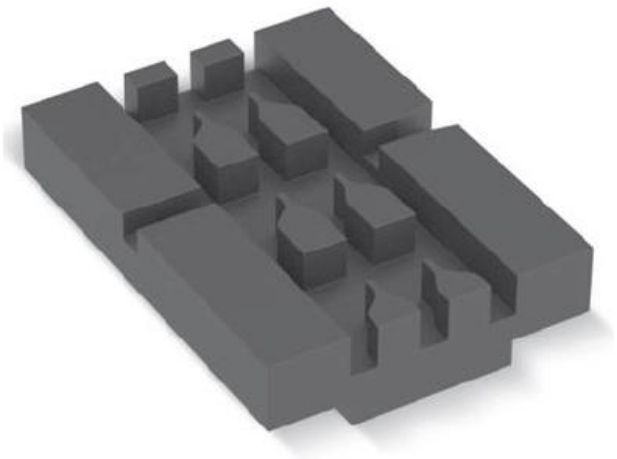
- Pins in plastic chains should have the knurl on the same side, and this knurled side should be put in the chain last. D-style pins have no direction preference.
- Check running direction, since the chain should always be driven at the fixed hinge eyes. Running direction is shown at the underside of the chain.
- Do not tension the chain when installing. Tensioning will result in a higher chainlaod and more wear of components. During installation the proper tension is manually achieved.

Chain tools

Rexnord have for most chains an assembly tool available for installing or removing the pin of the chain.

Chain tools for the following chains are available:

- Plastic & Metal Table Top Chain with 1.5” Pitch (Code: 10143737)
- Metal Heavy Duty Table Top Chain (Code: 10360631)
- Metal Table Top Chain 661 Series (Code: 10361105)
- Metal Table Top Chain Heavy Duty Double Hinge (Code: 10360579)



Conveyor Design

Quick-Link

The Rexnord Stainless Steel chains can also be equipped with the Rexnord Quick-Link. With this link the chains can be opened and closed within seconds.

- Less installation time
- Extra safety
- Cost savings
- Identification of the Quick-Link with a red dot
- 820 sprocket required to accommodate the spring

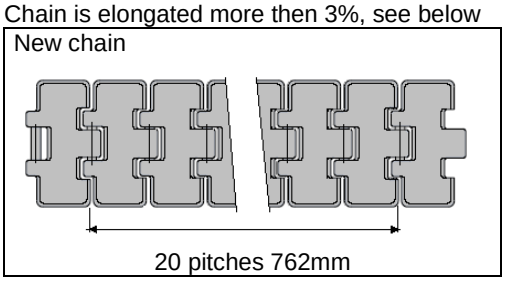
Chain inspection & maintenance

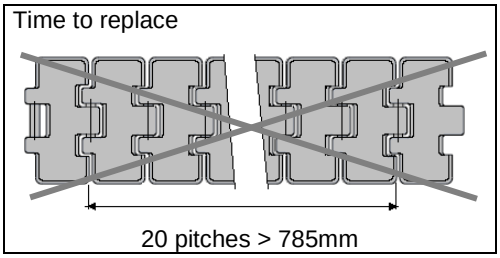
- Check the condition of the chain regularly, and replace links which are damaged. Important in this matter is to try to find the cause of the damaged links. Wear patterns or damage on a chain can often lead you to a problem area elsewhere in the conveyor.
- Check the amount of catenary sag and remove links or modules when the catenary of the chains exceeds prescriptions. Remember catenary grows during full load.
- Check if the rollers turn freely, repair or replace (with rubberized rollers) if not.
- In case of lubrication check if the lubrication system operates properly.
- Check carryways and wear strips for excessive wear or peculiar wear patterns.
- Check positions of transfer plates and check the fingerplates for broken/ worn parts and repair or replace if necessary.

Chain replacement

We recommend replacement of slatband chains, if the following is the case:

- Chain is elongated more then 3%, see below





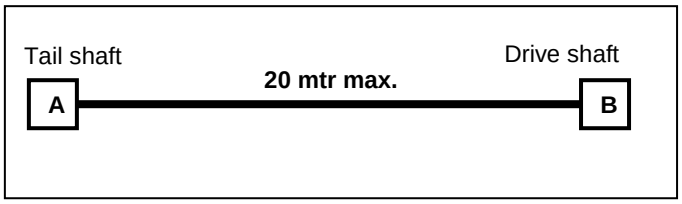
- The thickness of the topplate of the slatband chain is reduced to 2.0 mm
- The surface becomes unflat or very rough due to (uneven) wear, especially in applications where product handling is critical. Also replace if the side of the hinge of sideflexing chains wears away and exposes the pin.
- The chain jumps on the sprocket
- It is also important to look at the position of the chain in the production line. Chains that run on a no-pressure inliner have to be replaced all at once. If only one chain is replaced there will be a chance of unacceptable height differences, which could result in products topping over.

Conveyor Design

Straight running configuration

The length of a conveyor is not unlimited. There is a certain maximum length for each application. The limits are depending on factors like chain- or belt type, lubrication, kind of product, load. The exact maximum conveyor length can be calculated with the readily available calculation program.

Generally for straight running conveyors we recommend a maximum track-length of 20m.

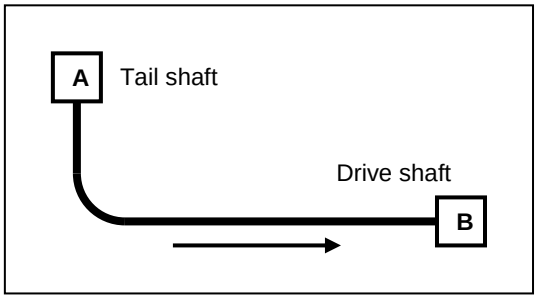


Shorter conveyors are built to obtain lower backline pressure by means of better control facilities. The chainspeed can be controlled using frequency controlled drives. When for instance one conveyor runs full, the chainspeed of the preceding conveyor can then slowly be decreased. Pasteurisers, warmers and coolers can require longer track lengths.

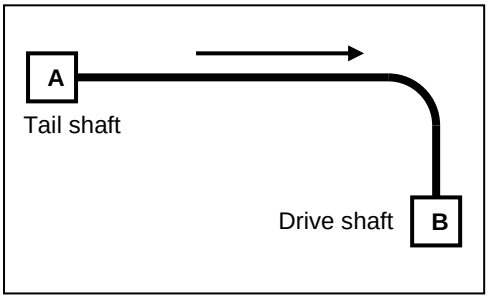
Side flexing configuration

When planning a side-flexing conveyor layout, the designer must consider the following factors that affect chain life:

- Minimize the number of corners whenever possible
- When conveying from point A to point B, design the conveyors so that the drive is positioned furthest from the last corner (see drawing), resulting in lower chain tension and maximizing chain life



Preferred



Avoid

For further information on side-flexing belt we refer to the side-flexing belt section.

Maximum chain speed modular belts

Chain material and type	Maximum speed (m/min)		
	Dry	water	Water & soap
PSX	100	120	180
XLG	80	100	180
AS	60	N/A	N/A
XP	30	40	80
LBP	60	60	60
Supergrlp	60	60	60
RBP flexbelts	40) [1]	40) [1]	40) [1]

[1]) PV-Limit

Maximum speed values depend on the PV-value of the curve, which represents a combination of pressure and velocity with a specific limit.

Abrasive conditions or exceeding the speed, results in increased wear, and a decrease in working load.

Slip stick / Pulsating effects

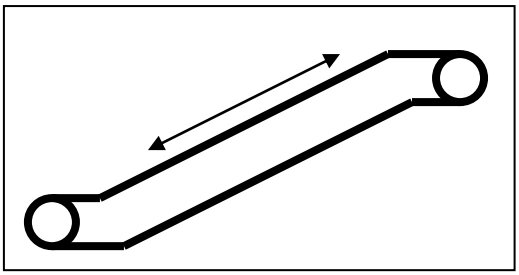
Slip-stick is the changeover from static friction to dynamic friction. Stick-slip can be caused for example by uneven lubrication, long track length, frequency inverters at low frequency or vibrations from the chain return. Slip-stick effects can cause a pulsating chain operation.

We have the experience that with long, low speed conveyors, the chance of a pulsating operation increases.

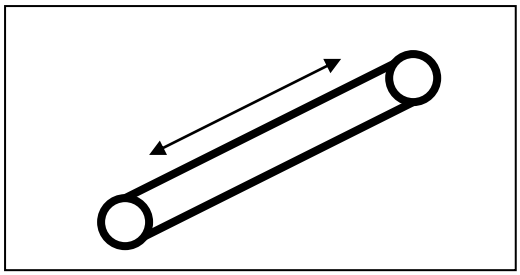
To avoid stick-slip, try to influence the points named above. Please contact application engineering whether you need further help.

Inclining / declining conveyor configuration

Slatband chains can be used on in- or declined conveyors which are basically constructed in the same way as level conveyors. Main concern is to avoid that the products slide down or tip. Conveyors can be constructed with a level in/outfeed section, see below.



Level in/outfeed



No in/oufeed

We recommend a minimum level section of 1 mtr. This eliminates the chance the chain is lifted out of the curve.

Max. possible angle

The maximum possible angle is depending on several factors: Coefficient of friction between chain and product; acceleration/deceleration; product stability and external factors like dirt or debris. Below a general table is shown with maximum angles determined by belt friction.

Maximum angles inclines / declines		
Chaintype	**Lubricated**	**Dry running**
Plastic modular belts	2.5º	4.5º
Rubbertop belts	9º	20º
Variations can vary due to actual circumstances.		

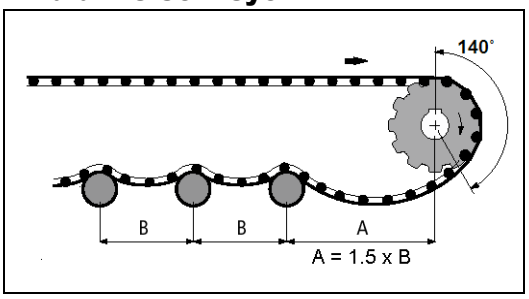
Please contact Application Engineering for further information.

Conveyor Design

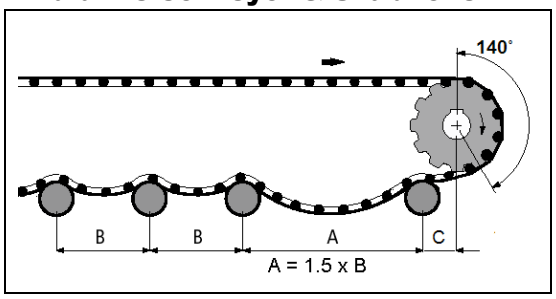
Uni-directional conveyors

These conveyors have the drive motor and sprocket at the end of the conveyor.

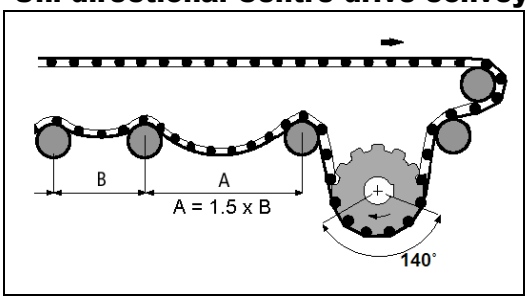
End-drive conveyor



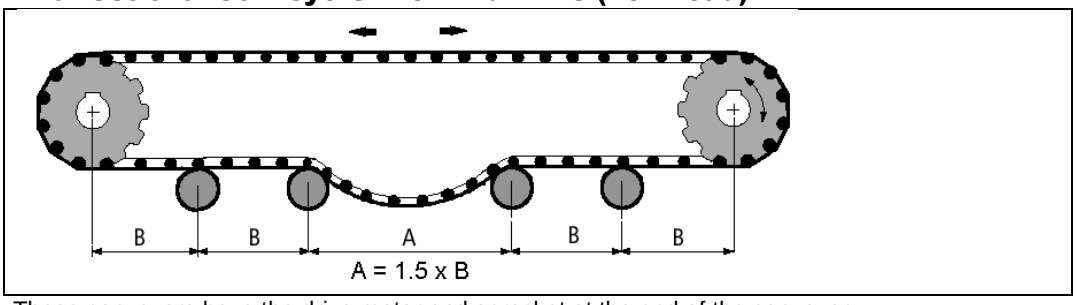
End-drive conveyor & snub roller



Uni directional Centre-drive conveyor

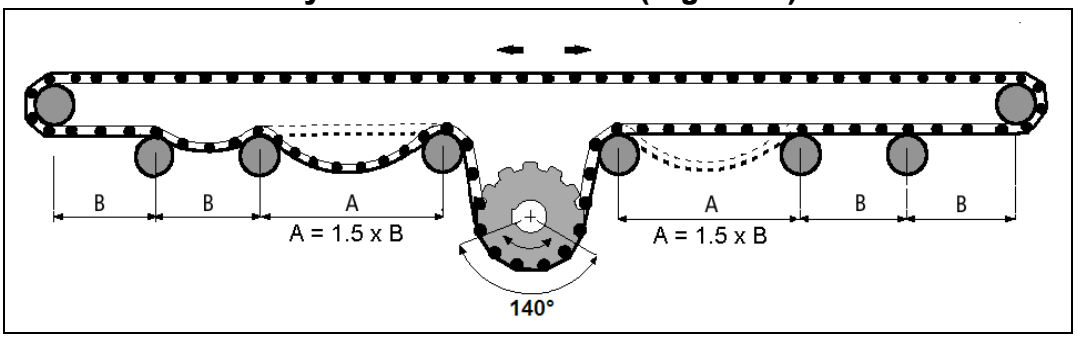


Bi-directional conveyors with End Drive (Low load)



These conveyors have the drive motor and sprocket at the end of the conveyor

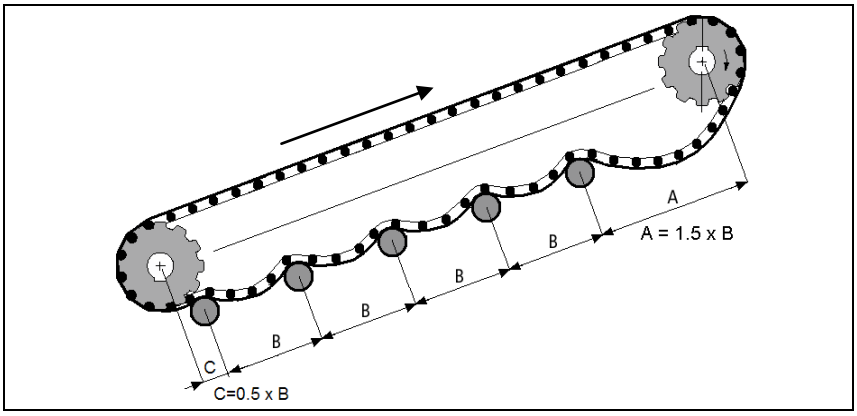
Bi-directional conveyors with Centre Drive (High load)



These conveyors can have a small end roller to reduce the transfer area

Conveyor Design

Drive construction inclines



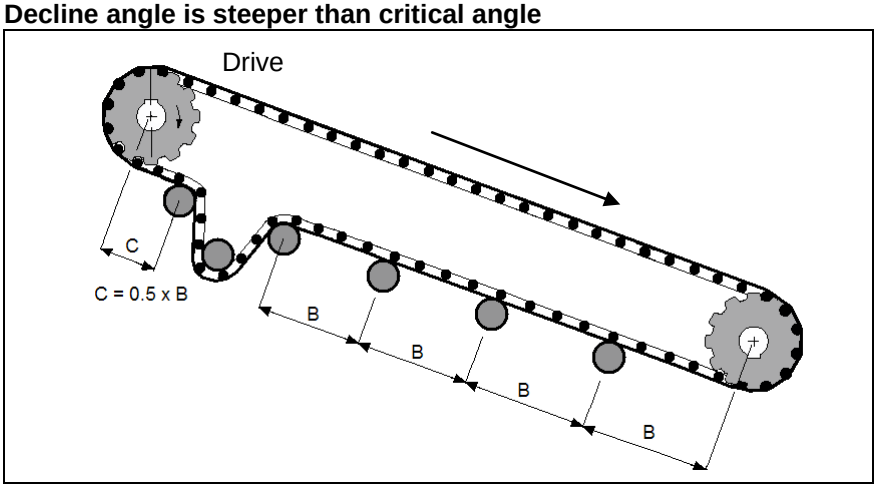
Drive construction declines

Declined conveyors have the drive at the upper- or at the lower side of the conveyer. This position depends on the friction between the chain/belt and the upperpart, and also on the preferred angle of the decline. See explanation below to determine where the position of the drive should be.

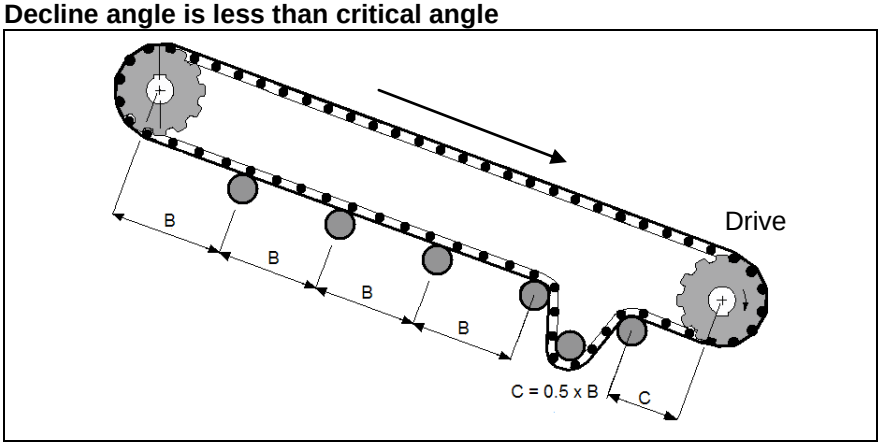
Calculate the critical angle (∠ critical) with:

Tan (∠critical) = Friction between chain - wearstrips

Decline angle is steeper than critical angle



Decline angle is less than critical angle



Note: Please note that a gravity tensioner is recommended for declined conveyors

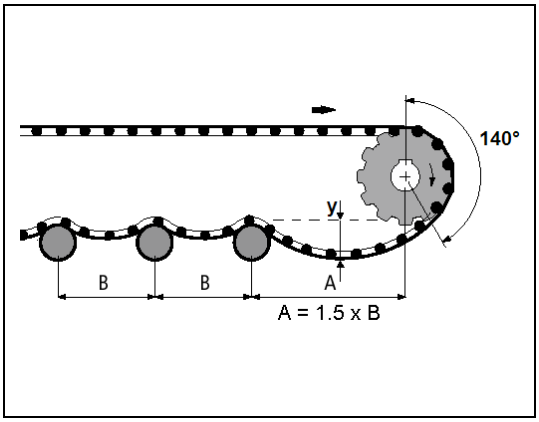
Conveyor Design

Wrap around angle

Recommended wrap angle on sprockets is: **140º +/- 10º.**
When the wrap angle is too small, the sprocket will not be able to transfer the load to the chain anymore causing the chain/belt to jump on the sprockets. When the wrap angle is too big, the chain/belt can stick to the sprocket.

Catenary sag

It is recommended to create a catenary sag just behind the sprocket which provides a complete discharge of the chainload.

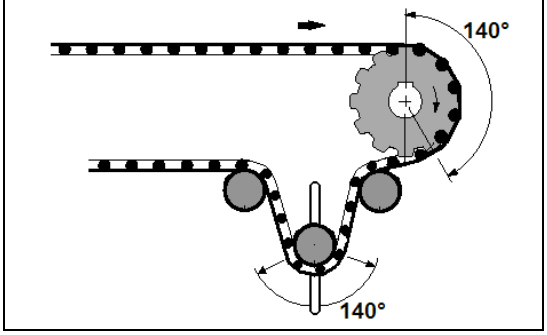


Type	A	B	Vertical
500-series	700	500	50-125
510-series	700	500	50-125
1500-series	900	600	50-125
8500-series	700	500	50-125
5930-series	700	500	50-125
1000-series	700	500	50-125
1005-series	700	500	50-125
1010-series	700	500	50-125
7700-series	700	500	50-125
6390-series	900	600	50-150
2000-series	1250	750	100-200
2010-series	700	500	100-200

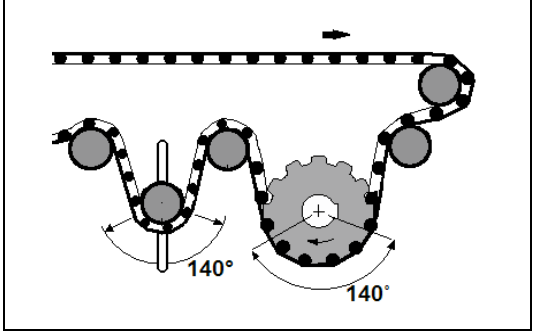
1) Use guide shoes or flat return for LBP chains
2) For 2500- and 9200-series see Engineering manual Pasteurisers / warmers / coolers
3) For 6990- and 3120-series see Engineering manual Automotive

The right vertical catenary sag can usually be obtained automatically by just pulling both ends together and mounting them together. Only for large 2000- and 2500-series belts tensioners have to be used during installation. The catenary sag will increase due to elevated temperatures. Furthermore, the chain or belt can elongate due to strain and wear of the pins and hinge eyes. Therefore it is important to check and adjust the catenary regularly.

End drive with tensioner



Centre drive with tensioner



A tensioner construction is only necessary if the conveyor design does not allow for proper catenary sag due to a lack of space. A tensioner can also be used with declined conveyors, but in all other cases it is not recommend to tension the chain/belt.

NOTE: The tensioner roller/sprocket can be fixed on an arm or move up and down in slots in the conveyor sideplates. Please contact our Technical Support for a calculation of the tensioner weight.

Conveyor Design

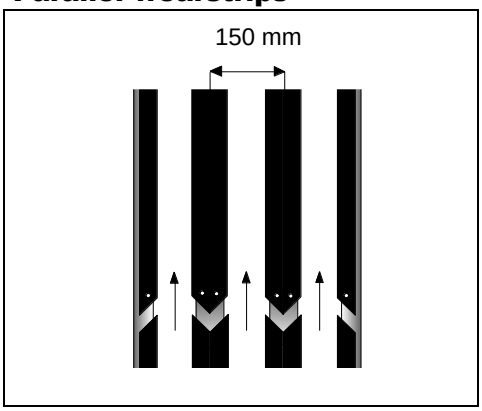
Roller diameter for slatband chains

Type	Idler Rollers	Return Rollers	Backflex Rollers
500-series	>25	30 - 100	>30
1500-series	>19	45 - 100	>40
8500-series	>36	45 - 100	>50 (RR >100)
5930-series	>36	45 - 100	>50
1000-series	>50	45 - 100	>60 (RR >100)
1005-series	>50	45 - 100	>60
1010-series	>50	45 - 100	>80
7700-series	>50	45 - 100	>60
6390-series	>100	60 - 120	>100
2000-series	>100	60 - 120	>100 (RR >120)
2010-series	>100	50-120	>175

The recommended roller diameters in the table are an indication. The width of the conveyor is not taken into account. The diameter of the shaft should be large enough to avoid excessive deflection of the roller. At the same time it is recommended not to exceed the maximum diameter, because the roller friction may be too heavy to be set in motion by the belt. 45mm is acceptable with rubberized rollers only.

Wearstrip spacing belts

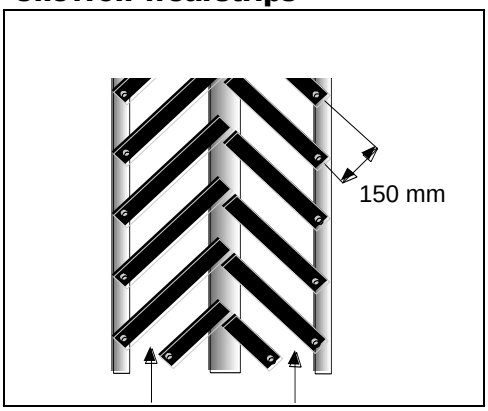
Parallel wearstrips



Standard construction for slatband chains and modular (Positrack) belts.

Recommended for bi-directional conveyors (wearstrips should be chamfered at both sides) and for belts with Positrack guiding.
Load: Low to middle

Chevron wearstrips

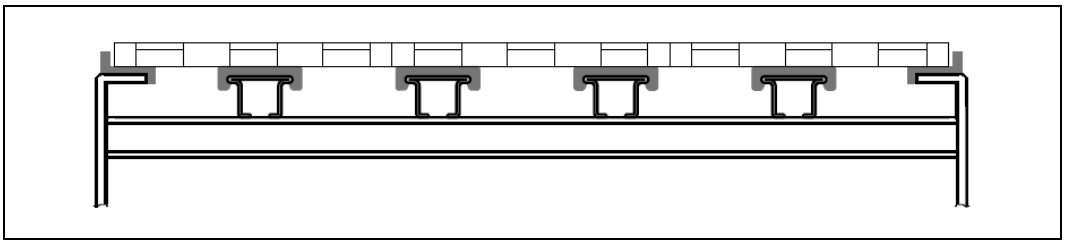


Suitable for modular belts but not directly suitable for belts with Positrack. An extra parallel guiding strip makes Positrack possible.

Best construction regarding even belt wear.
Load: middle to high.

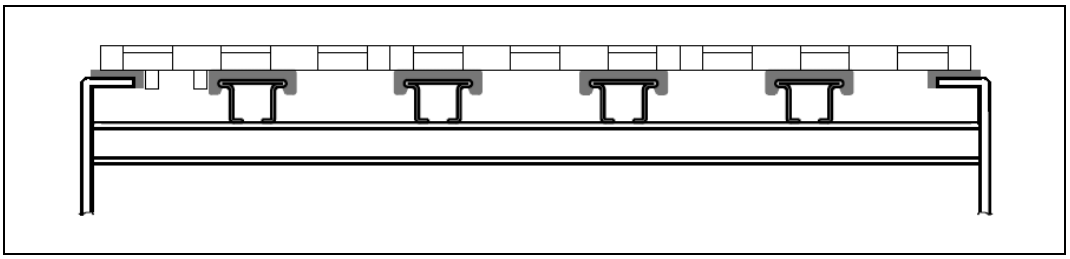
Conveyor Design

Belts without Positrack



Belts without Positrack should be guided at the side of the belt. Make sure there is sufficient clearance for thermal expansion.

Positrack belts

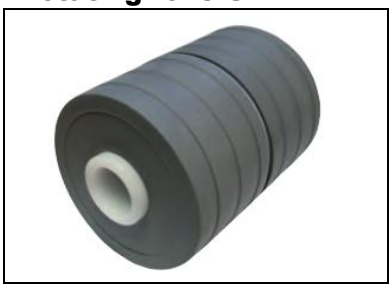


Belts equipped with Positrack lugs should be guided at these lugs only. When multiple tracks are used both Positrack lugs must be placed at the transfer.

Belt return

Modular belts can be returned on rollers, guideshoes or serpentine wearstrips, as shown below.

Rotating rollers



- Reduced wear
- Simple construction.
- Good accessibility
- Speed up to 60 m/min
- Only point contact between chain/ belt and roller. - small rollers may cause a rattling sound.

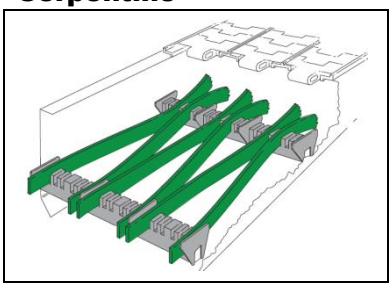
Rollers should rotate freely, therefore rollers with rubber cover are recommended.

Fixed guideshoes

- Good accessibility
- Simple construction.
- Recommended only for LBP chains/belts.
- Risk of uneven wear chainsurface
- Only point contact between chain and guide shoe.
- High friction

Minimum guide shoe radius is 200 mm.

Serpentine



- Speed higher than 60 m/min possible
- Reduction of vibrations and pulsation
- Even wear of chain surface
- Conveyor length < 12m
- Low capacity to absorb chain elongation

Wearstrip materials

Metal wearstrips

Metal wearstrips can be used in most situations using plastic belts and are strongly recommended in abrasive environments.

Stainless steel:

- Recommended for abrasive conditions due to avoiding of dirt embedding in the wearstrips;
- Recommended for plastic chains/belts in dry environments with speeds > 60m/min;
- Cold rolled stainless steel with a hardness of at least 25 Rc and a surface finish of maximum 1.6 µm is recommended;
- Best results can be achieved by using stainless steel AISI 431 (Werkstoff-Nr. 1.4057 material;
- Hot rolled AISI 304 (Werkstoff-Nr. 1.4301) is **not** recommended as wearstrip material.

Plastic wearstrips

Friction is low compared to steel wearstrips. Two types of plastic are suitable to be used as a wearstrip material.

UHMWPE / ULF:

- Most common used wearstrip material with extreme low friction;
- Excellent resistance against many chemicals;
- Virtually no moisture absorption, therefore very suitable for lubricated lines;
- Good dimension stability;
- Reduces some of the noise conveyors produce;
- Suitable for dry running conveyors with speeds up to 100 m/min (ULF) or up to 60 m/min (UHMWPE);
- Ram Extruded UHMWPE or Rexnord ULF is recommended.

Polyamide:

- Relatively high moisture absorption which makes the material expand;
- Polyamide is also used with additives to reduce the coefficient of friction;
- Suitable for dry running high speed conveyors.

Recommended wearstrip materials

Wearstrip material	Plastic modular belts	
	Dry	Lubr.
UHMWPE /ULF 1)	+ 2)	+
Polyamide	+/-	-
Stainless steel	+	+

\+ Recommended
+/- Satisfactory
\- Not recommended
1) Up to 60 m/min in non abrasive conditions
2) Only in non abrasive conditions

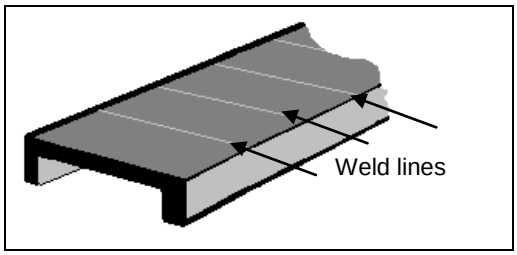
Conveyor Design

UHMWPE Wearstrip Installation

RAM-extruded wearstrips

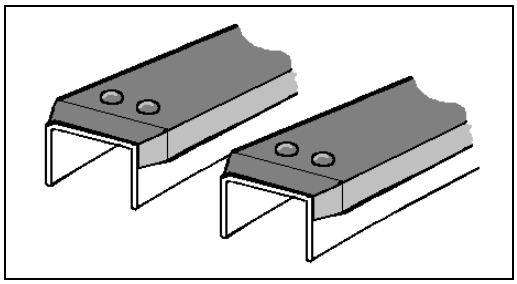
We recommend to use RAM-extruded wearstrips. Main benefits of RAM-extruded UHMWPE wearstrips is that less debris will embed in the material in comparison to worm extruded or machined UHWMPE. This will results in less belt wear.

Ram-extruded wearstrips can be recognized by weld lines which occur with each ram stroke, see drawing.



Chamfering of wearstrips

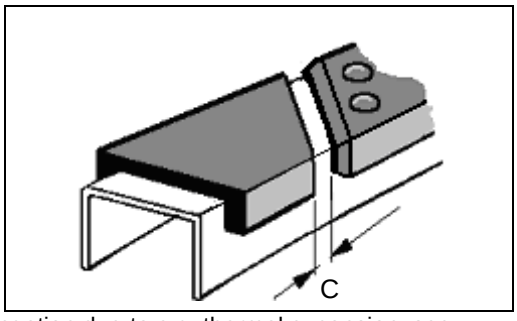
Wearstrips should always be chamfered at the beginning of the strip where they are fixed. Chamfering reduces the risk of chain-obstruction resulting in a smooth operation.The wearstrips should be chamfered at the sides and at the top.



Splitting the wearstrips

On straight sections with a length of more than 3 metres, or for high (40º - 70ºC) application temperatures, we recommend to divide the wearstrip into several sections, because of the thermal expansion of the strips.

It is recommended to cut the wearstrips at 45º angles to provides smooth chain/ belt transfers. Make sure only the infeed side of the wearstrip is fixed to the conveyor frame to avoid bulging of the wearstrips.
The size of clearance depends on the expected elongation due to e.g. thermal expansion, see drawing.



Calculation example

For MCC 1000 UHMWPE material the expansion coefficient is 0.2 mm/m/ºC. A temperature increase of 20ºC would elongate a 3 meter wearstrip with:

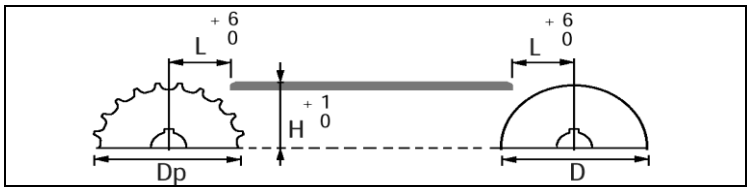
20ºC * 3mtr * 0.2=12 mm

In this case, the gap between the wearstrips should be a bit larger than 12 mm.

We recommend a maximum wearstrip length of 6mtr. with UHWMPE wearstrips.

Position sprocket - wearstrips

When the chain enters the sprocket, it tends to raise and fall slightly (chordal action). For this reason the sprockets should be mounted in such a way that its highest point is no higher than the top of the wearstrips. The front edges of the wearstrips should be bevelled to allow smooth and free running of the chain. The distance from the end of the wearstrip to the sprocket shaft centerline should equal dimension L, otherwise the wearstrip will interfere with the free articulation of the chain as it enters the sprockets.

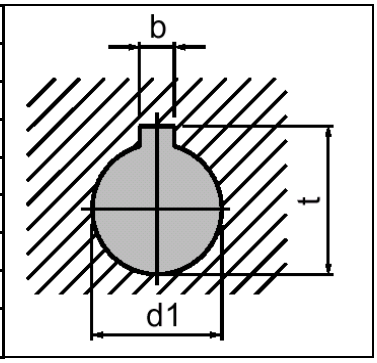


Belt type	Drive sprocket H (mm)		L mm
500-series	Dp/2	-4.35	12.7
510-series	Dp/2	-4.0	12.7
1500-series	Dp/2	-4.95	15
8500-series	Dp/2	-4.35	19.1
5930-series	Dp/2	-4.35	19.1
1000-series	Dp/2	-4.35	25.4
1005-series	Dp/2	-6.35	25.4
1010-series	Dp/2	-5.0	25.4
7700-series	Dp/2	-6.35	25.4
6390-series	Dp/2	-7.0	50
2000-series	Dp/2	-8.0	50.8
2010-series	Dp/2	-8.0	50.8
1050	Dp/2	+3.5	25.4
1055	Dp/2	+3.4	25.4

Idler roller H (mm)	L mm
Dp/2	12.7
Dp/2	12.7
Dp/2	15
Dp/2	19.1
Dp/2	19.1
Dp/2	25.4
Dp/2	25.4
Dp/2	25.4
Dp/2	25.4
Dp/2	25.4
Dp/2	50
Dp/2	50.8
Dp/2	50.8
Dp/2	25.4
Dp/2	25.4

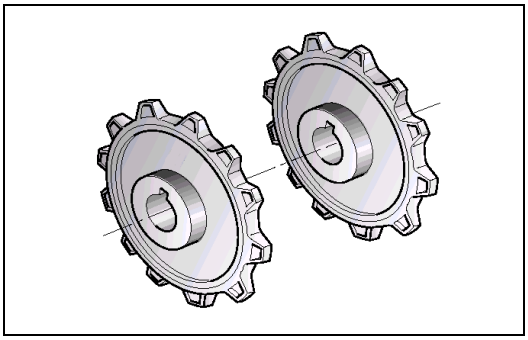
Keyway dimensions of MCC sprockets

Dimensions in mm			Dimensions in inch		
d1	**b**	**t**	**d1**	**b**	**t**
25mm	8	28.3	1"	1/4	1 1/8
30mm	8	33.3	1 1/4"	1/4	1 3/8
35mm	10	38.3	1 1/2"	3/8	1 9/16
40mm	12	43.3	1 3/4"	3/8	1 15/16
45mm	14	48.8	2"	1/2	2 1/4
50mm	14	53.8			
60mm	18	64.4			



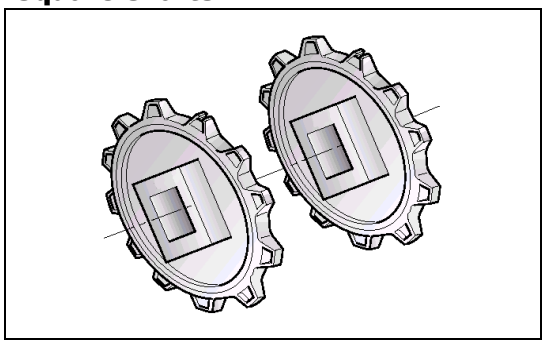
Conveyor Design

Round shafts



- More readily available
- Usually straighter than square shafts
- Easier to install
- Shafts are ready to accommodate bearings

Square shafts



- More rigid than round shafts of the same size (less torsion & deflection).
- No keyway preparation is required
- Larger drive surface results in a better load transfer

Shafts

In all situations stainless steel is recommended for shaft material. Metaloxydes that come from a rusty shaft are extremely abrasive and would therefore reduce the wearlife of the conveyor components. It is also important to use shafts with a sufficient hardness and a smooth surface. The shaft diameter depends on the conveyor load and its width.

NOTE: Maximum deflection of the shaft must not exceed 2 mm. Depending on the load and shaft length, it can be necessary to use a larger diameter shaft or an extra bearing in the middle of the shaft to reduce the shaft deflection.

Shaft tolerances

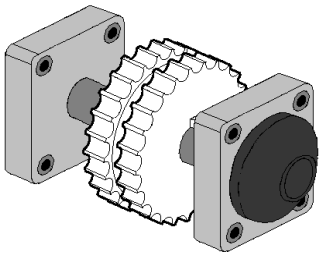
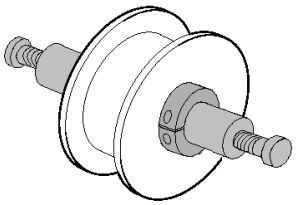
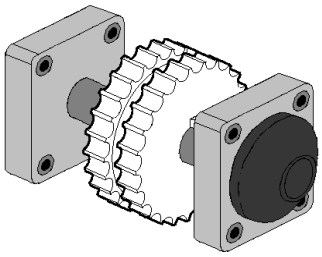
It is important that the tolerance of the shaft meets the specifications of the sprocket, so the sprocket can slide over the shaft at all times. In combination with all MCC sprockets the following shaft specifications are required, depending on the shaft diameter.

Dimension (mm)	Shaft tolerance (mm)	Idler shaft surface finish (µm)
Round shaft		
< Ø 90	max h 9 (ISO)	0.8
> Ø 90	max h 11 (ISO)	1.2
Square shafts		
40 x 40	+ 0 / - 0.16	0.8
90 x 90	+ 0 / - 0.5	1.6
120 x 120	+ 0 / - 0.5	1.6

Belts with Positrack

If belts with Positrack® lugs are used, sprockets should be able to move sideways on the shaft. If belts without Positrack are used, the centre sprockets should be fixed.

Bearings

Drive sprocket	Idler	
	Sprocket or drum	sprocket
		
Shaft with keyway equipped with bearings	Fixed idler shaft without keyway. The idler drum rotates freely on the shaft. Suitable for lower speed < 30mtr/min dry run < 60mtr/min lubricated	Idler shaft with keyway equipped with bearings for higher conveyor speed. In polluted areas an idler shaft with bearings is also recommended.

Before selecting bearings, check which chemicals will be present. Also check if dust and water are present. Sealed bearings have a better protection against dust. Also use bearings with high mechanical and heat resistance for a longer wearlife of the construction.

Make sure the edges of the shaft are rounded off to ease assembly and to avoid damage to the rubber parts of the bearing sealing units.

Fixation all sprockets

When the speed of all idler sprockets on the shaft is the same, e.g. on a wide belt conveyor, we recommend to fix all idlers on a shaft with bearings. This way there is no difference in velocity between the shaft and the sprockets and no wear of the idlers will occur.

Fix sprocket with lowest speed

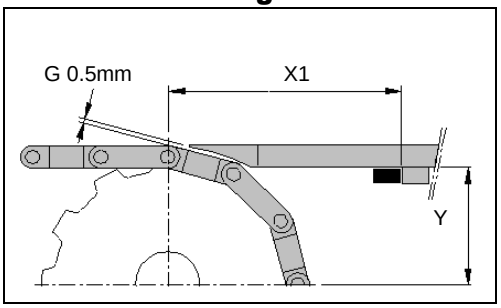
When the speed of the idler sprockets on the same shaft is different, we recommend fixing the sprocket with the lowest speed to the shaft. This way the relative speed difference which occurs between the shaft and the other idler sprockets is as low as possible and the fixed idlers will not drive the slower moving idlers.

Conveyor Design

Freeflow transfers

Freeflow is a system of integrated, tapered flights at the edge of the belt which allows for smooth 90º transfers without deadplates resulting in a self clearing construction. The MCC Free Flow system is always equipped with the MCC Positrack system which ensures an optimum tracking of the belt at the 90º Freeflow transfer.

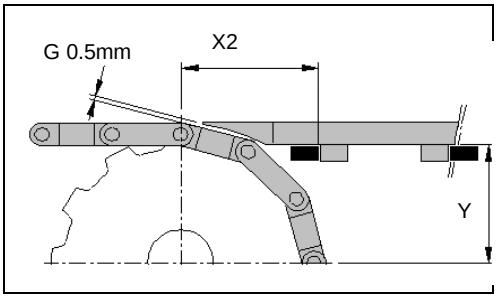
Freeflow with single Positrack



From:	To:	Z teeth	X1 [mm]	Y [mm]
FFGP 1000	FG(P) 500	16	90.6	27.9
		28	92.1	52.6
		36	X	X
FFTP 1000 FFGP 1000	FT(P) 1000 FG(P) 1000	12	91.5	44.3
		18	93.5	67.9
		20	95.0	75.6

X = Not recommended

Freeflow with double Positrack

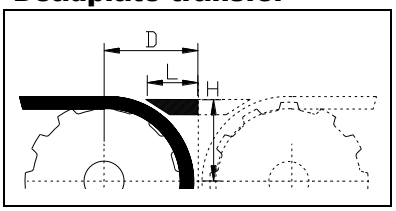


From:	To:	Z teeth	X2 [mm]	Y [mm]
FFGP 1000	FG(P) 500	16	58.5	27.9
		28	60.0	52.6
		36	X	X
FFTP 1000 FFGP 1000	FT(P) 1000 FG(P) 1000	12	59.0	44.3
		18	61.5	67.9
		20	63.0	75.6
FFTP 1005	FT(P) 1000	12	75.4	40.7
		18	77.7	64.8
		20	78.5	72.8
FFTP 1005	FT(P) 1005	13	76.0	46.7
		18	77.9	66.8
		21	79.0	78.9

X = Not recommended

In order to be able to adjust dimensions X and G, we recommend making the return shaft adjustable in X- and Y- direction within a range of some millimetres.

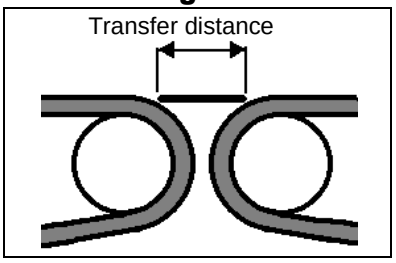
Deadplate transfer



Mass handling an pack handling conveyors with head to tail transfers use less floorspace then side transfers. A disadvantage is that the deadplates may cause products to stop. Minimum widths of deadplates can be calculated with the data below.

Chain/ Belt type	Roller/ Sprocket	L	D	H
500-series	19 mm nosebar	11.0	23.5	21.1
	16 teeth	21.5	38.5	35.0
505-series Flexbelt	30 mm	16.5	30.1	27.5
	28 teeth	38.0	65.0	60.0
1500-series	19mm nosebar	9.6	20.2	17.7
	7 teeth	9.6	22.2	20.9
1000-series	50 mm	19.5	38.0	33.5
	12 teeth	33.5	57.0	52.5
1000-series Super Grip	50 mm	23.7	41.5	38.2
	12 teeth	33.5	57.0	52.5
1005-series Flattop	50 mm	24	44.0	37.5
	13 teeth	44.3	64.5	57.9
1005-series LBP	50 mm	36.7	55.8	52.5
	13 teeth	58.9	77.5	72.3
1005-series Super Grip	50 mm	24	44.0	40.0
	13 teeth	44	64.5	60.4
1255-series Flexbelt	60 mm	34	47.6	42.5
	8 teeth	36.5	49.4	47.8

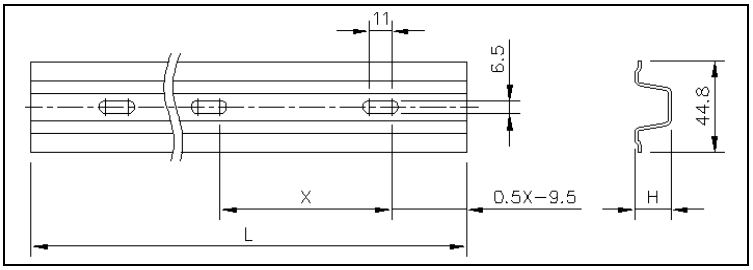
Self clearing transfer



We experienced that a deadplate length of less than 0.6 * product base diameter will result in a continuous flow of products.

Fingerplate transfers

Fingerplate transfers ensure a trouble-free transfer of products from and to the raised rib belts. Rexnord has developed a unique Click-Comb system, which makes it possible to click the combs onto a special Omega style bar, providing a smooth product transfer. RR 1000-series and RR-2000 series Finger combs are clicked onto a special profile. This way, it is easy to install and remove the fingerplates and system can expand and move freely. The profile is mounted on a base profile with M6 screws.

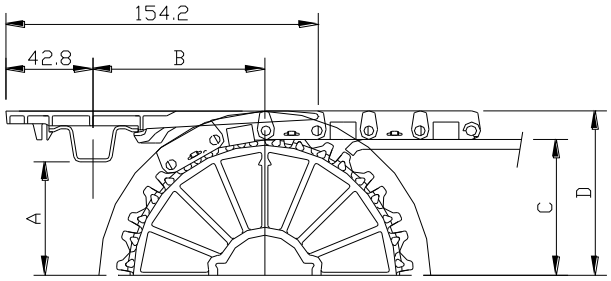


1000-series	2000-series
X = 85.0mm	X = 76.2mm
H = 18mm	H = 15mm

The length of the profile must be somewhat longer than the nominal width of the belt to accommodate expansion and the movement of the combs.

Conveyor Design

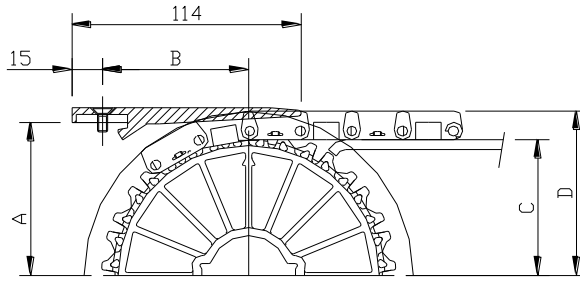
Finger transfer RR 1000-series



Nr. of teeth	Dp	A	B	C	D
12	98.1	33.2	75.0	44.3	58.6
16	130.2	76.6	80.0	60.6	74.9
18	146.3	56.8	85.0	67.9	82.2
20	162.4	64.5	90.0	75.6	89.9

Fingerplate transfer for 1000-series belts are available in two widths (85 or 170 mm). For 1000-series belts in Anti Static material, the Fingerplates are also available in AS material.

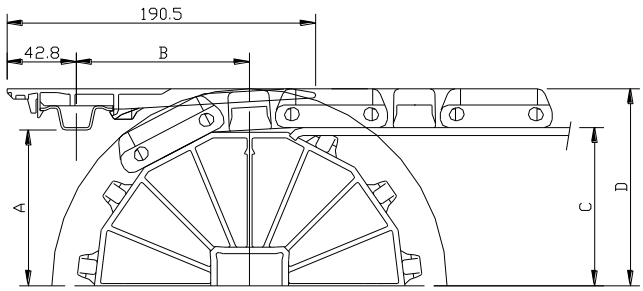
Finger transfer RR 1000-series narrow



Nr. of teeth	Dp	A	B	C	D
12	98.1	51.5	80.0	44.3	58.6
16	130.2	76.6	80.0	60.6	74.9
18	146.3	75.7	80.0	67.9	82.2
20	162.4	83.7	80.0	75.6	89.9

Please note that the finger transfers are screw-on type.

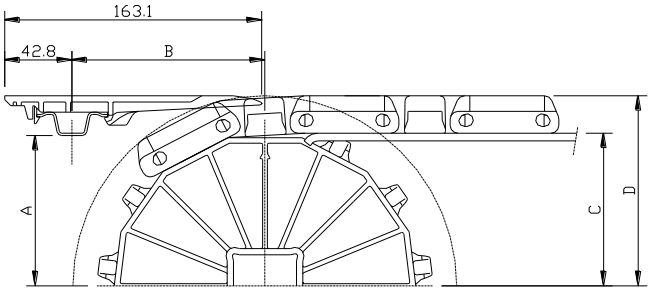
Finger transfer RR 2000-series in general conditions



Nr. of teeth	Dp	A	B	C	D
10	164.4	72.3	110.0	73.7	97.7
12	196.4	88.4	114.0	89.8	113.8
13	212.2	96.5	116.0	97.9	121.9
16	260.4	120.6	122.0	122.0	146.0

For RR 2000-series belt, a 190 mm long fingerplate is used in general applications.

Finger transfer RR 2000-series for glass applications



Nr. of teeth	Dp	A	B	C	D
10	164.4	72.3	122.3	73.7	97.7
12	196.4	88.4	122.3	89.8	113.8
13	212.2	96.5	122.3	97.9	121.9
16	260.4	120.6	122.3	122.0	146.0

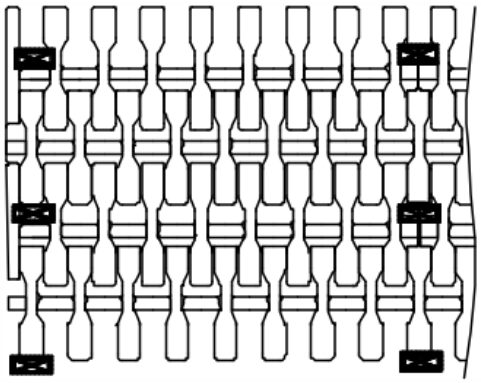
For glass handling applications, this special fingerplate features shorter and wider fingers.

For the 1000/2000-series fingerplates, a minimum gap of 2 mm next to the fingertransfer plates is recommended. This gap is necessary for easy removal of the fingerplates for replacement.

Sprocket Positions

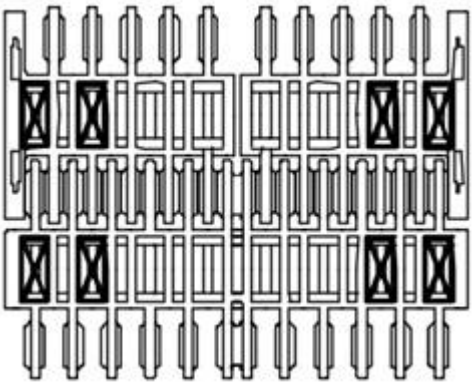
The required number of sprockets on the shafts depends on the load and the width of the belt. For an easy determination of the required number of sprockets to be used on the drive shaft and the idler shaft we advise to use the MCC calculation programme for chains & belts.

500-Series



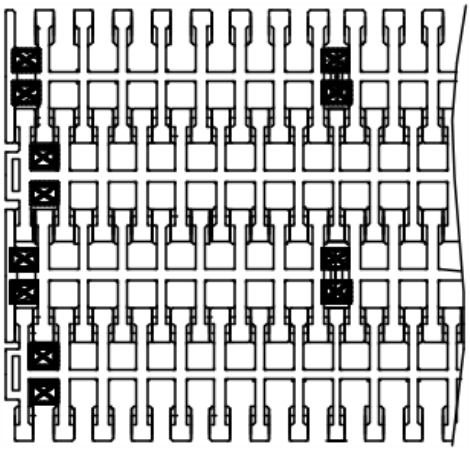
Sprockets can be positioned anywhere except the very outer pockets or at the module transfer

2000-Series



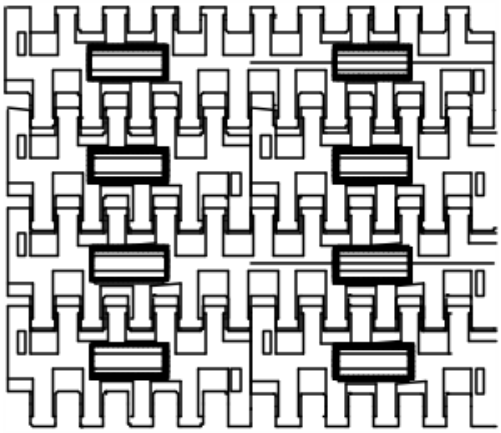
On 2000-Series belts, the sprockets cannot be placed at the very two outer pockets of the belt.

1000-Series



Sprockets can be positioned anywhere except the very outer pockets or at the module transfer

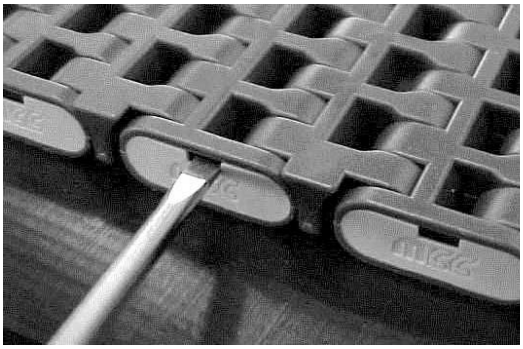
1005-Series



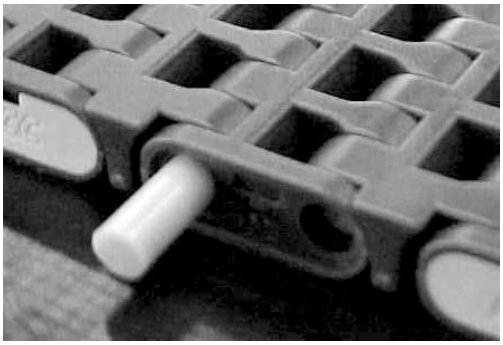
Sprockets can only be placed in fixed positions at one pocket each 85mm.

Conveyor Design

500-series

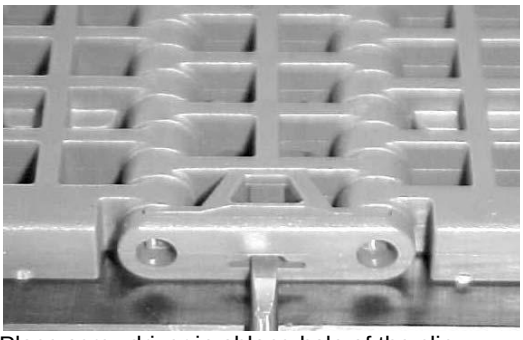


Place screwdriver in rectangular hole.

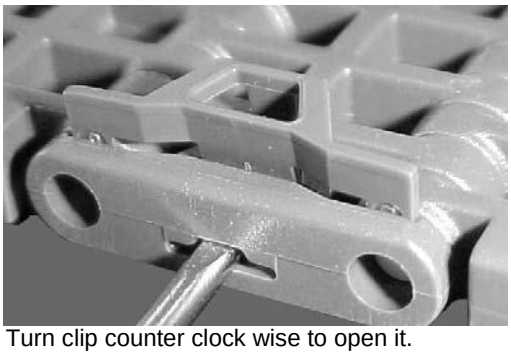


Remove open clip by pushing and turning screwdriver.

1000-series

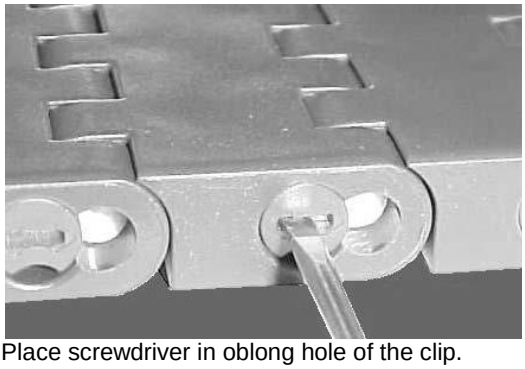


Place screwdriver in oblong hole of the clip.

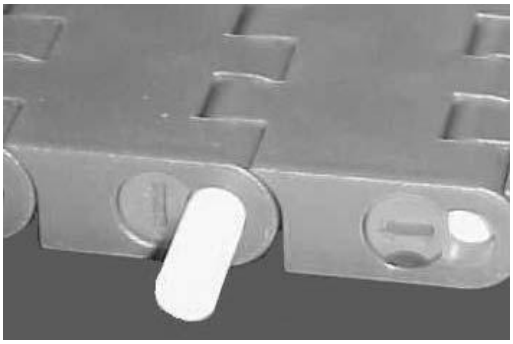


Turn clip counter clock wise to open it.

1005-series

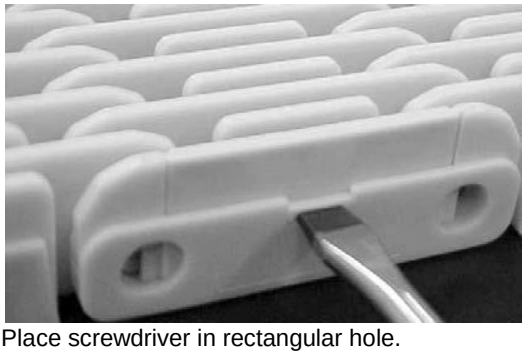


Place screwdriver in oblong hole of the clip.

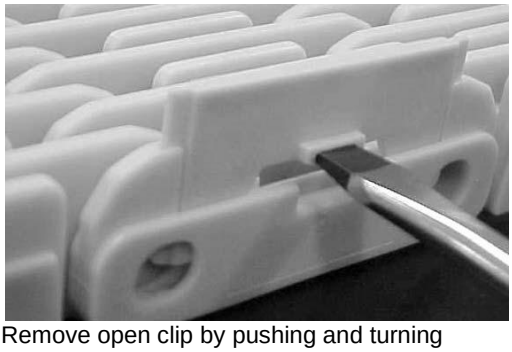


Turn clip counter clock wise to open it.

2000-series



Place screwdriver in rectangular hole.



Remove open clip by pushing and turning screwdriver.

Ispection of modular belts

A good condition of the line can be maintained when people recognise signs of initial wear/ failure and react accordingly. Following aspects are of importance during regular check-up.

- Check the condition of the chain/ belt regularly, and replace links/ modules which are damaged. Important in this matter is to try to find the cause of the damaged links/ modules. Wear patterns or damage on a chain or belt can often lead you to a problem area elsewhere in the conveyor.
- Check the amount of catenary sag and remove links or modules when the catenary of the chains exceeds prescriptions. Remember catenary could be larger under load.
- Check if the returnrollers turn freely, repair or replace if not;
- Remove dirt and debris which is stuck in the grid of the belt or inbetween the chain/ belt and the conveyor construction.
- In case of lubrication check if the lubrication system operates properly.
- Check carryways and wear strips for excessive wear or peculiar wear patterns.
- Check positions of transfer plates and check the fingerplates for broken/ worn parts and repair or replace if necessary.

Note: It is very important to replace damaged modules in plastic belts and links in plastic chains as soon as possible since small damage could lead to bigger damage if it is not repaired. If any damage is found such as pieces of plastic broken off, or a wear pattern at the side of the belt, the cause of the problem should be located.

Conveyor Design

Cleaning instructions

To be able to keep production lines running at highest efficiency, cleaning is most important.

Cleaning should include the removal of grease, dirt, dust and bacteria from the chain/ belt and the components. Cleaning is importance because it gives the following results:

- Disinfecting results in a hygienic system
- Products will be cleaner when they are packed
- Reduction of friction between chains/belts and products results in less tipping products and less wear.
- Removal of abrasive particles for longer wear life and components.

Note: It is recommended always to flush the chain/ belts with plenty of water after having the chains/ belts cleaned, to remove the cleaning agent from the conveyor.

Cleaning dry running conveyors

With dry running conveyors there is no continuous cleaning like with lubricated conveying. All products (beer or lemonade) spilled on the chain/ belt will result in pollution of the containers, increasing the friction, and the risk of products toppling over.

The main indicator for the necessity of cleaning is the increase of friction, which negatively affects the product flow. The required intervals for cleaning depend on the product type that is being filled, the stability of the product and the position in the line. For example: a conveyor next to a filler needs to be cleaned more often, compared to a mass handling conveyor near the palletizer.
In case of product spillage on the tracks, it is recommended to remove this as soon as possible in order to prevent drying up, preferable by rinsing with warm softened water.
The run dry conveyors in the most critical sections of a line should be cleaned daily to obtain maximum sanitation and performance. At the very minimum, rinse **daily** and thoroughly sanitize **weekly**.

Partially Lubricated Lines should thoroughly sanitized these on a weekly basis.

Methods of cleaning

1. Periodic high pressure hot water rinse or steam cleaning should prove satisfactory. Spray the chain/belt in place on each conveyor, both on the carry and in the return sections. For easy access to the undersides of the chains/belts in the carry and return ways, some manufacturers provide “clean-out” holes in the side frames.
2. Warm water and mild soap are commonly used to clean the conveyors.
3. Foaming agents or other chemical cleaners may be used if they are compatible with conveyor materials (see General Guidelines, item 4). Carefully follow the instructions provided by the manufacturer to determine proper concentration of solutions and proper, safe use and disposal.

Note: Keep water, steam and chemicals away from electrical disconnects, motors, photo eyes, etc.

4. In extreme situations, it may be necessary to periodically clean the chains/belts with a bristle brush. Clean the chain/belt in place on the conveyor, both on the carry and in the return sections.
5. When running dry after a period, fine wear-dust can arise, coming from the wearstrips, curves and/or chain/belt. Remove this dust periodically with cloth or vacuum cleaner.

Note: The main objective is to clean the chain/belt carrying surface and underside as well as the wearstrips and tracks.

Note: Inspect conveyors often. Remove broken or jammed containers or pieces of containers as soon as they are detected. Use cleaning solutions to clean away excessive spillage.

Belt replacement

- Belts have to be replaced if the thickness of the belts is reduced unacceptably. In the table below guidelines are shown regarding replacement criteria.

Belt type	Max wear (mm)	
	Surface	Bottom
500-series	1 mm	1 mm
1500-series	1 mm	1 mm
505-series	1.5 mm	1.5 mm
1000-series	1 mm	1 mm
1005-series	1.5 mm	1.5 mm
1255-series	1.5 mm	1.5 mm
2000-series	2 mm	2 mm
2500-series	3 mm	3 mm

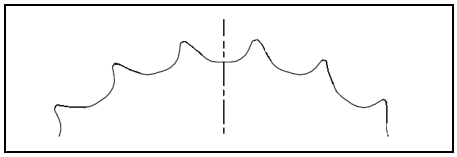
- In practice, the product handling will dictate whether the surface wear is acceptable or not. If wear at the top or bottom surface results in product tippage, replacement is eminent.

- 3% elongation of the pitch, is the ultimate elongation limit of belts. Further elongation causes the belt jumping on the sprockets under load.

Note: When replacing chains or belts always replace the wearstrips, the sprockets and idlers as well

Sprocket & idler replacement

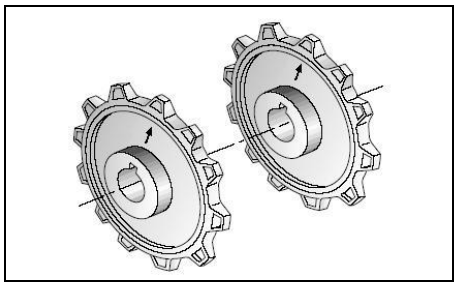
- The teeth show a hookshape, which obstructs the chain. Also replace sprockets when teeth are damaged or when chain jumps on the sprocket.



- The idler is oscillating on the shaft, because of a worn bore

- If belt is replaced due to elongation, always install new sprockets!

Note: When replacing sprockets on multiple track conveyors, make sure all sprockets are mounted in the same position on the shaft.



Wearstrip replacement

- When chains are replaced always replace the wearstrips.

- Dirt or debris is embedded in the wearstrip material in unacceptable amounts

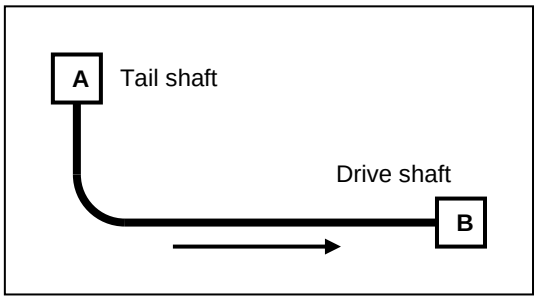
Sideflexing Belts

Basic design considerations

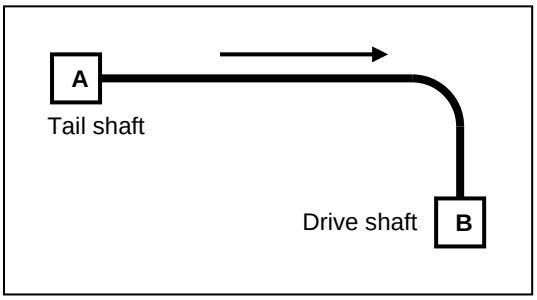
Side flexing configuration

When planning the side-flexing conveyor layout, the designer must consider the following factors that affect chain life:

- Minimize the number of corners in each conveyor whenever possible
- When conveying from point A to point B, design the conveyors so that the last curve is positioned furthest from the last drive (see drawing), resulting in lower chain tension and maximizing chain life



Preferred

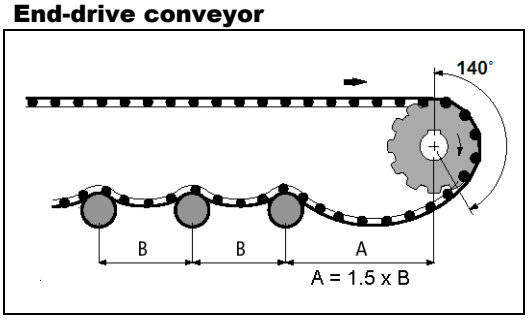


Avoid

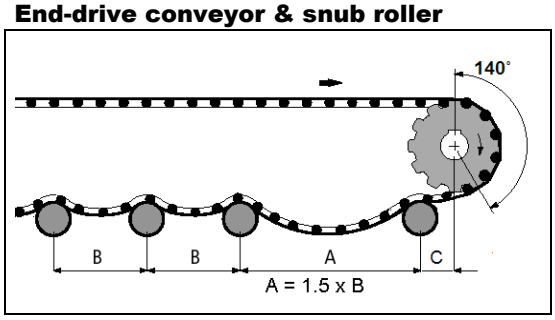
End drive construction

These conveyors have the drive-motor and sprocket at the end of the conveyor.

End-drive conveyor

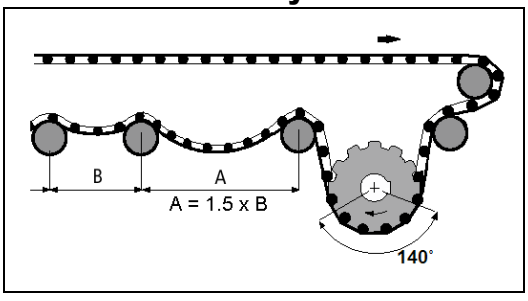


End-drive conveyor & snub roller



C should be 150-250mm

Centre-drive conveyor



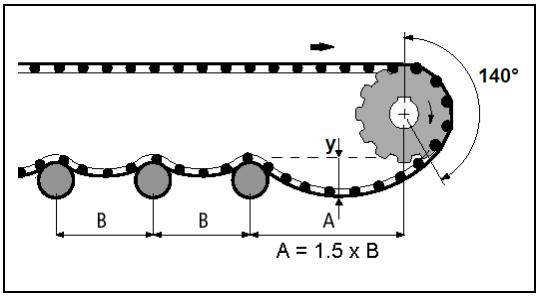
Wrap around angle

Recommended wrap angle on sprockets is: **140º +/- 10º.**
When the wrap angle is too small, the sprocket will not be able to transfer the load to the chain anymore causing the chain/belt to jump on the sprockets. When the wrap angle is too big, the chain/belt can stick to the sprocket.

Sideflexing Belts

Catenary sag

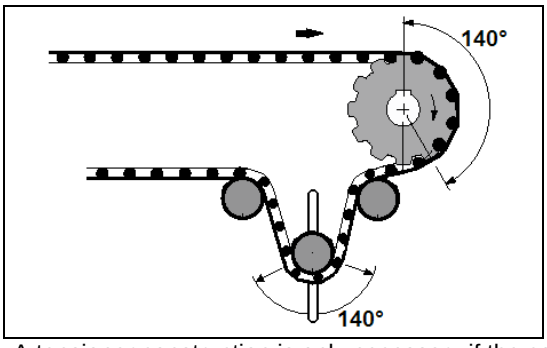
It is recommended to create a catenary sag which provides a complete discharge of the load on the belt.



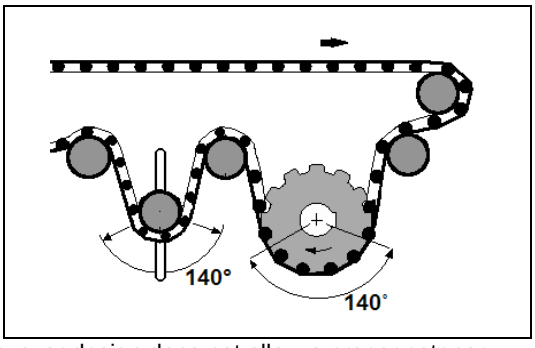
type	A (mm)	B (mm)	Vertical sag Y(mm)
505-series	700	500	50-125
1255-series	600	500	50-125
1265-series	600	500	50-125
1275-series	600	500	50-125
1285-series	600	500	50-125
7956-series	600	500	75-150

The right vertical catenary sag can usually be obtained automatically by just pulling both ends of the belt together and connecting them. The catenary sag will increase due to elevated temperatures. Furthermore, the belt can elongate due to strain and wear of the pins and hinge eyes. Therefore it is important to check and adjust the catenary regularly.

End drive with tensioner



Centre drive with tensioner



A tensioner construction is only necessary if the conveyor design does not allow a proper catenary sag due to lack of space. A tensioner can also be used with declined conveyors, but in all other cases it is not recommend to tension the chain/belt.

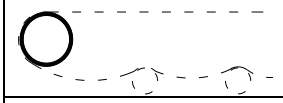
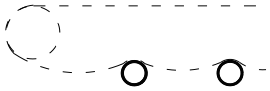
NOTE: The tensioner roller/sprocket can be fixed on an arm or move up and down in slots in the conveyor sideplates.

Maximum speed sideflexing belts

The maximum speed of a sideflexing belt depends on the PV-value of the curve. This PV-value represents a combination of pressure and velocity with a specific limit. Please contact application engineering if you require support in determining the PV-limit and maximum speed of an application. A maximum speed of 40 m/min is recommended. For higher speeds please contact application engineering.

Sideflexing Belts

Roller diameter for sideflexing belts

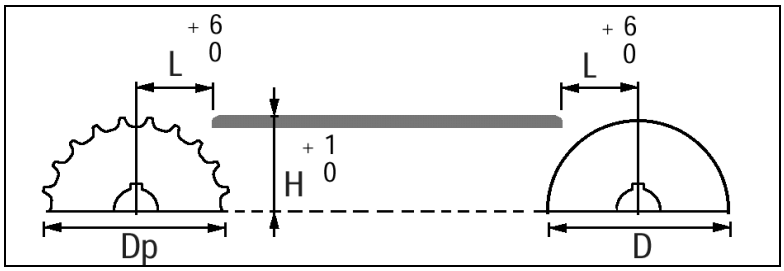
Belttype	505-series	1255-series	1265-series	1275-series	1285-series	7956-series
	All dimensions in mm					
Idler rollers 	>30	>60[1]	>60[1]	>60[1]	>60[1]	Depends on execution
Return rollers 	60-100	60-100	60-100	60-100	60-100	60-100
Backflex rollers 	> 30	> 80	> 80	> 80	> 80	> 300

[1] For long conveyors with high load we recommend to use a roller with a diameter of 80mm.

The recommended roller diameters in the table are an indication. The width of the conveyor is not taken into account. The diameter of the shaft should be large enough to avoid excessive deflection of the roller. At the same time it is recommended not to exceed the maximum diameter, because the roller friction may be too heavy to be set in motion by the belt.

Position sprocket - wearstrips

When the belts enter the sprocket, it tends to rise and fall slightly (chordal action). For this reason the sprockets should be mounted in such a way that their highest point is no higher than the top of the wearstrips. The front edges of the wearstrips should be chamfered to allow smooth and free running of the chain. The distance from the end of the wearstrip to the sprocket shaft centerline should equal dimension L, otherwise the wearstrip will interfere with the free articulation of the chain as it enters the sprockets.

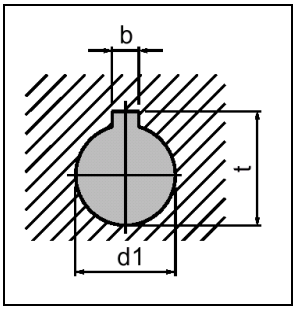


Belt type	Drive sprocket H (mm)	L mm
505-series	$\frac{Dp}{2}$ -6.35	12.7
1255-series	$\frac{Dp}{2}$ -6.35	32.0
1265-series	$\frac{Dp}{2}$ -6.35	32.0
1275-series	$\frac{Dp}{2}$ -6.35	32.0
1285-series	$\frac{Dp}{2}$ -6.35	32.0
7956-series	$\frac{Dp}{2}$ -6.35	32.0

Idler roller H (mm)	L mm
$\frac{Dp}{2}$	12.7
$\frac{Dp}{2}$	32.0
$\frac{Dp}{2}$	32.0
$\frac{Dp}{2}$	32.0
$\frac{Dp}{2}$	32.0
$\frac{Dp}{2}$	32.0

Sideflexing Belts

Keyway dimensions of MCC sprockets



d1 (mm)	b (mm)	t (mm)
25mm	8	28.3
30mm	8	33.3
35mm	10	38.3
40mm	12	43.3
45mm	14	48.8
50mm	14	53.8
60mm	18	64.4

d1 (inch)	b (inch)	t (inch)
1"	1/4	1 1/8
1 1/4"	1/4	1 3/8
1 1/2"	3/8	1 9/16
1 3/4"	3/8	1 15/16
2"	1/2	2 1/4

Wearstrip materials

Stainless steel wearstrips

Can be used in most situations using plastic belts and are strongly recommended in abrasive environments.

- Recommended for abrasive conditions due to avoiding of dirt embedding in the wearstrips;
- Recommended for plastic chains/belts in dry environments with speeds > 40m/min;
- Cold rolled stainless steel with a hardness of at least 25 Rc and a surface finish of maximum 1.6 µm is recommended;
- Best results can be achieved by using stainless steel AISI 431 (Werkstoff-Nr. 1.4057 material; soft AISI 304 (Werkstoff-Nr. 1.4301) is not recommended as wearstrip material.

UHMWPE / ULF wearstrips

Friction is low compared to steel wearstrips. Two types of plastic are suitable to be used as a wearstrip material.

- Most common used wearstrip material with extreme low friction;
- Excellent resistance against many chemicals;
- Virtually no moisture absorption, therefore very suitable for lubricated lines;
- Good dimension stability;
- Reduces some of the noise conveyors produce;
- Suitable for dry running conveyors with speeds up to 40 m/min (UHMWPE) or up to 60 m/min (ULF);
- Extruded quality 1000 grade UHMWPE is recommended.

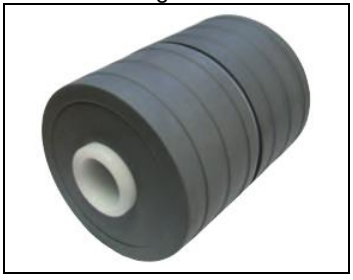
Recommended wearstrip materials

Wearstrip material	Plastic modular belts	
	Dry	Lubr.
UHMWPE / ULF	+	+
Polyamide	+/-	-
Stainless steel	+	+

\+ Recommended
+/- Satisfactory
\- Not recommended
[1] Up to 60 m/min in non abrasive conditions
[2] Only in non abrasive conditions

Belt return

For sideflexing belts we recommend to use rotating rollers for the returnpart to reduce wear.



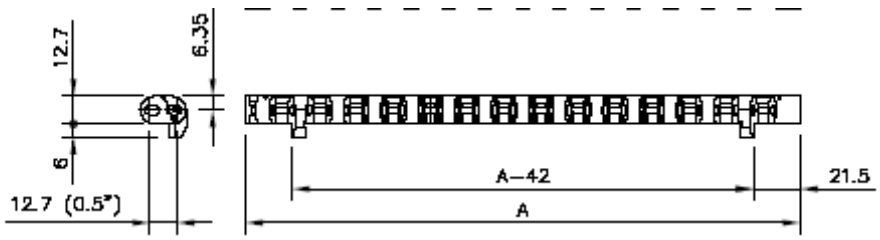
\+ Simple construction.
\+ Good accessibility

– Only point contact between chain/ belt and roller.
– Small rollers may cause a rattling sound.

Rollers should rotate freely therefore, rollers with rubber cover are recommended.

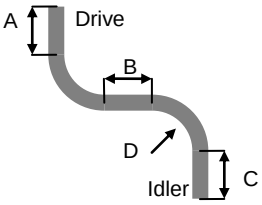
RBP 505-Series

Beltstyle RBP 505-series



Minimum backflex diameter: 30mm
Minimum end roller diameter: 30mm

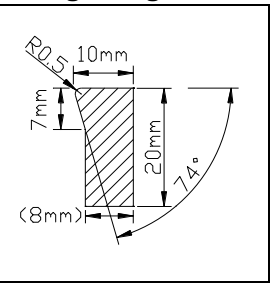
Lay-out Guidelines



A	**Minimum straight section drive side*** For belt width <500mm: minimal 500mm. For belt width >500mm: minimal belt width.
B	**Minimum straight in between 2 curves (S-bend)** 1.5 x belt width
C	**Minimum straight section idler side** 500mm
D	**Minimum inside radius** 2 x belt width

* For centre-drive add 200mm.

MCC guiding Profile RBP 505-series

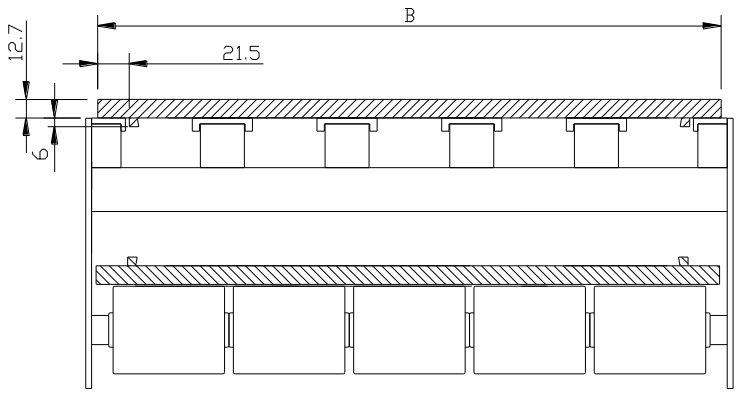


The MCC guiding profile should be used to guide the belt through the curve. Material of the guiding strip is special polyamide, which offers low friction and high wear resistance.

Standard:
Codenr. **10144189** (length of 3m, MCC 3500)
FDA-approved:
Codenr. **10318501** (length of 2m, MCC 3600)
ULF:
Codenr. **10383606** (length of 3m, MCC 4000)

Straight section RBP 505-series

Below a cross section drawing is shown with recommended straight section construction

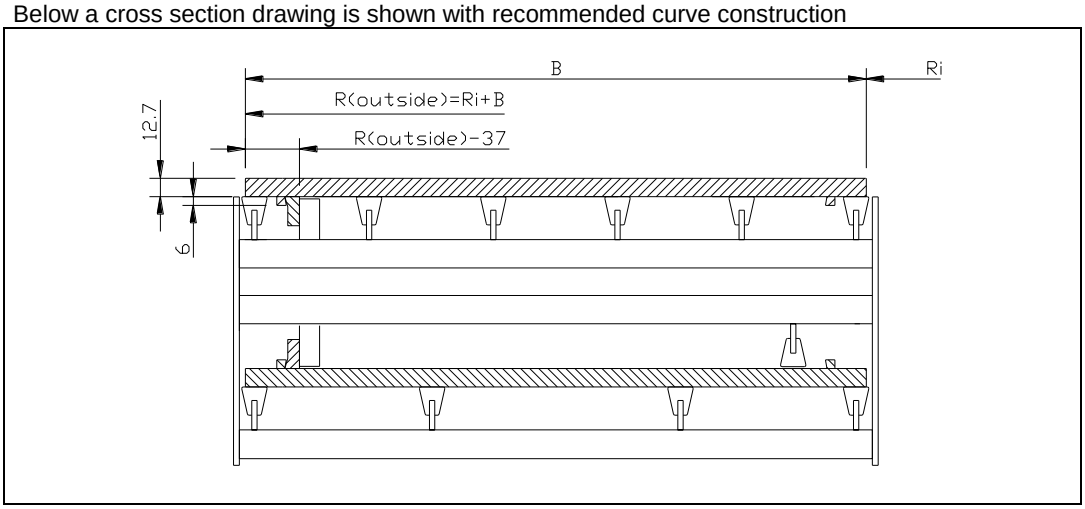


Please make sure there is enough space between belt and conveyor / surrounding area.
Sideguides can prevent the belt from touching the conveyor sheet, especially after the curves.

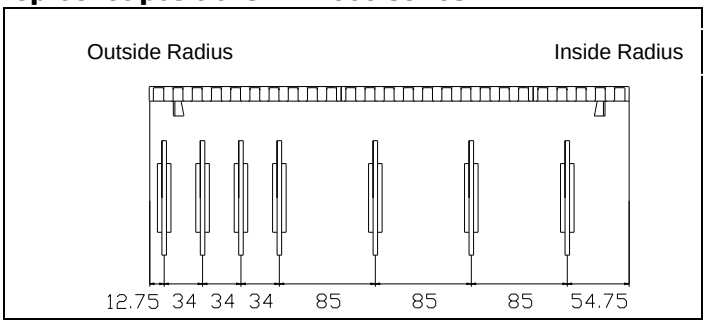
RBP 505-Series

Curve section RBP 505-series

Below a cross section drawing is shown with recommended curve construction

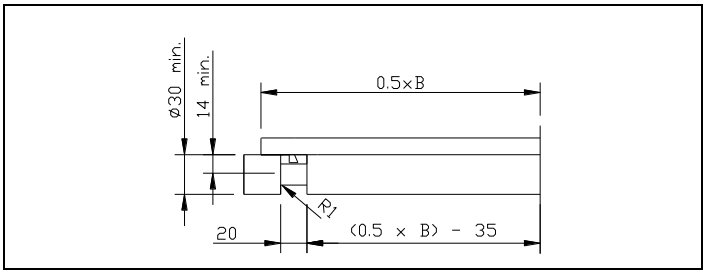


Sprocket positions RBP 505-series



Belt width	Nr. of sprockets	
	Drive	Idler
170 mm	4	2
255 mm	5	3
340 mm	6	4
425 mm	7	5
510 mm	8	6
595 mm	9	7
680 mm	10	8

Roller dimension RBP 505-series



Rollers should rotate freely at all times; therefore we strongly recommend to equip the rollers with bearings.

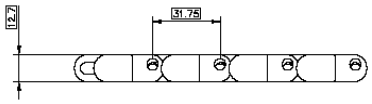
*) For high loads (>500 N) or wide belts (>510 mm) use bigger shaft diameter and/ or support the shaft in the centre

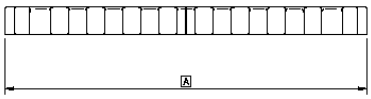
Additional Notes

- Complete machined UHMPWE curves including curve profiles are available in any angle and for any belt width.
- Please note that the catenary sag can increase under load. Make sure the belt cannot catch against the sideframe in the retourpart taking increased catenary into account.

RB 1255-Series

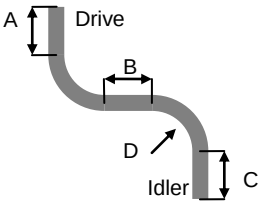
Beltstyle RB 1255-series





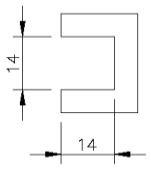
Minimum backflex diameter: 60mm
Minimum end roller diameter: 60mm

Lay-out Guidelines



A	**Minimum straight section drive side** 750mm with normal drive, 500mm with gravity tensioner.
B	**Minimum straight in between 2 curves (S-bend)** 1.5*belt width
C	**Minimum straight section idler side** 500mm
D	**Minimum inside radius** 2 * belt width

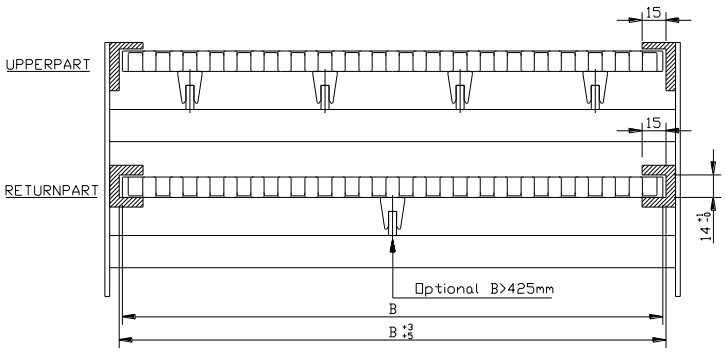
Recommended guiding Profile dimensions for RB 1255-series



The guiding profile should be used to guide the belt through the curve. We recommend to use a c-profile according to the drawings dimension. Recommended material of the guiding strip is Nylatron which offers low friction and high wear resistance. UHMWPE can also be used.

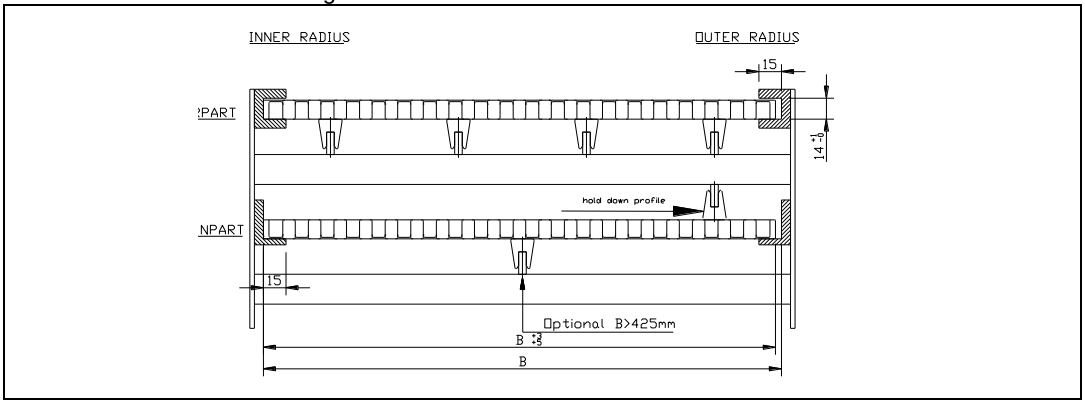
Straight section RB 1255-series

Below a cross section drawing is shown with recommended straight section construction

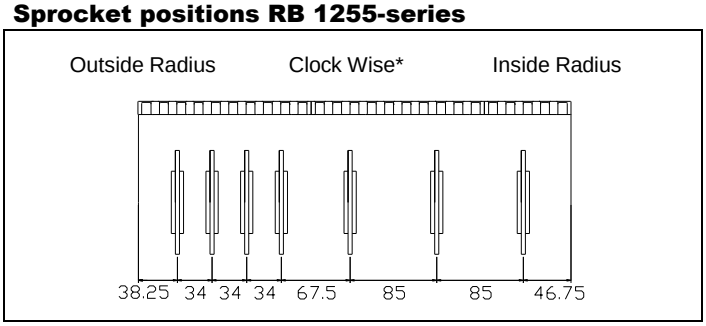


Curve section RB 1255-series

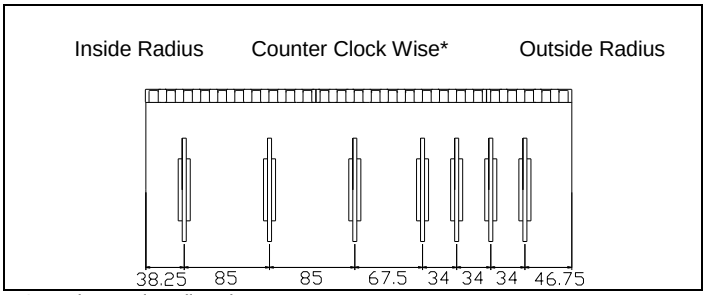
Below a cross section drawing is shown with recommended curve construction



Sprocket positions RB 1255-series

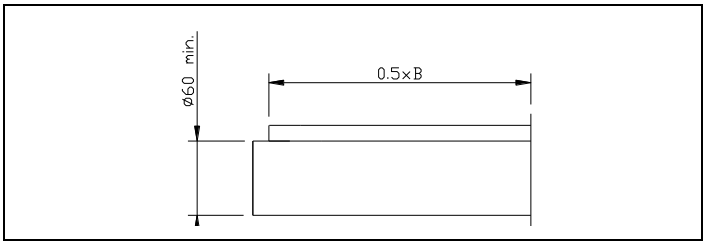


Belt width	Nr. of sprockets	
	Drive	Idler
170 mm	3	2
255 mm	5	3
340 mm	6	4
425 mm	7	5
510 mm	8	6
595 mm	9	7
680 mm	10	8



*Seen in running direction

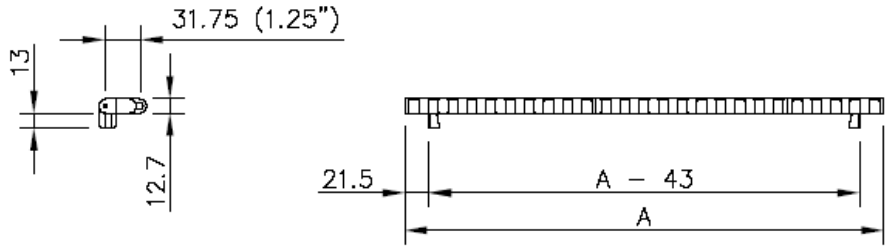
Roller dimension RB 1255-series



Rollers should rotate freely at all times; therefore we strongly recommend to equip the rollers with bearings.

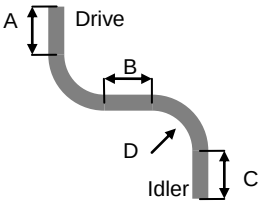
RBP 1255-Series

Beltstyle RBP 1255-series



Minimum backflex diameter: 60mm
Minimum end roller diameter: 60mm

Lay-out Guidelines



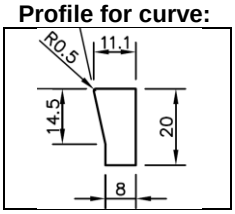
A	**Minimum straight section drive side** 750mm with normal drive, 500mm with gravity tensioner.
B	**Minimum straight in between 2 curves (S-bend)** 1.5 * beltwidth
C	**Minimum straight section idler side** 500mm
D	**Minimum inside radius** 2 * beltwidth

MCC guiding Profile RBP 1255-series

The MCC guiding profile should be used to guide the belt through the curve and along the frame.
There are 2 materials available:

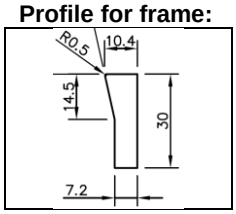
- MCC3500: Special polyamide
- MCC4000: Ultra Low Friction UHMWPE

Profile for curve:



Standard:
Codenr. 10341541
(length of 3m, MCC3500)
ULF:
Codenr. 10383604
(length of 3m, MCC4000)

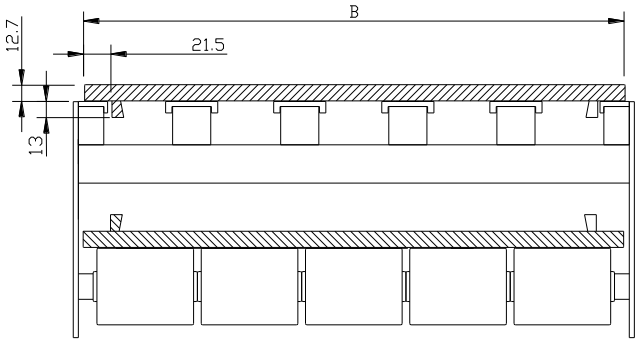
Profile for frame:



Standard:
Codenr.10361334
(length of 1.8m, MCC3500)
ULF:
Codenr. 103836610
(length of 3m, MCC4000)

Straight section RBP 1255-series

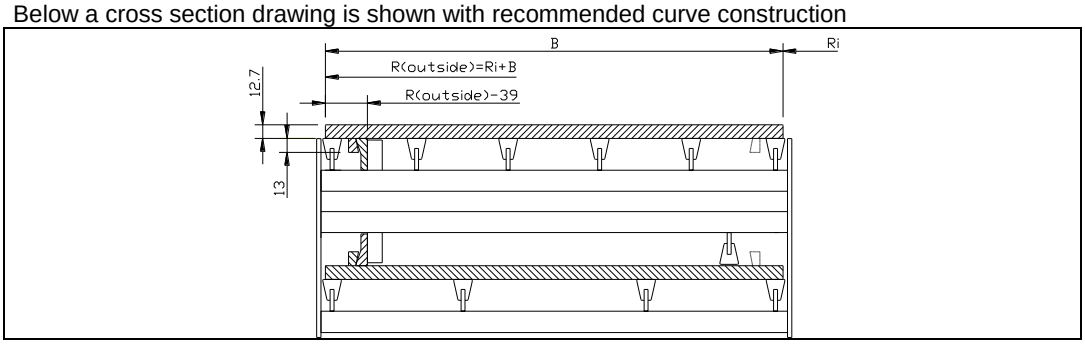
Below a cross section drawing is shown with recommended straight section construction



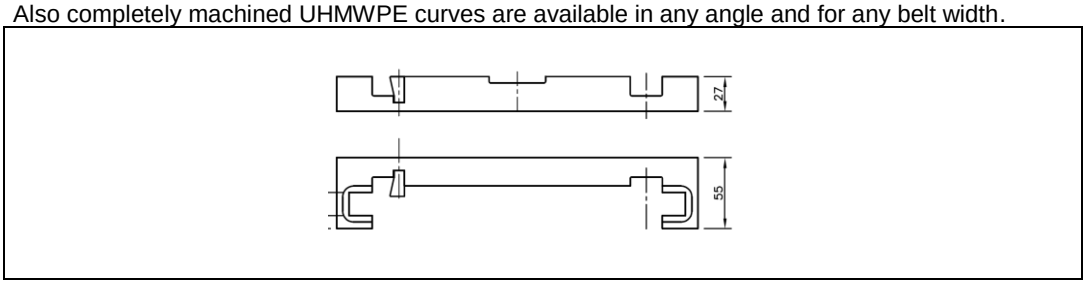
RBP 1255-Series

Curve section RBP 1255-series

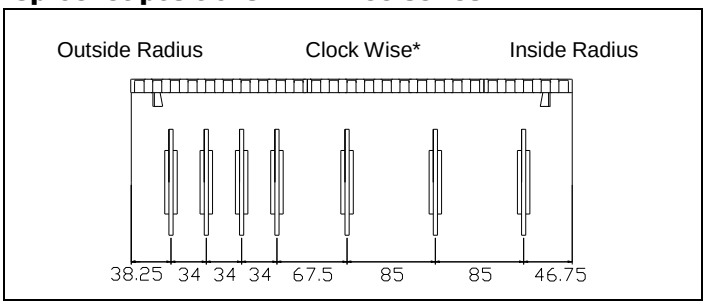
Below a cross section drawing is shown with recommended curve construction



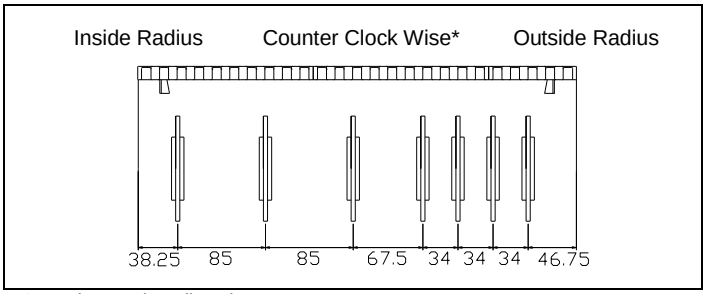
Also completely machined UHMWPE curves are available in any angle and for any belt width.



Sprocket positions RBP 1255-series

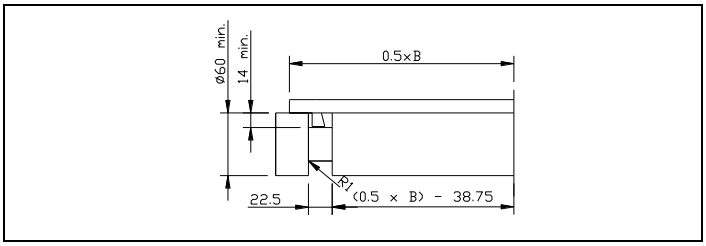


Belt width	Nr. of sprockets	
	Drive	Idler
170 mm	3	2
255 mm	5	3
340 mm	6	4
425 mm	7	5
510 mm	8	6
595 mm	9	7
680 mm	10	8



*Seen in running direction

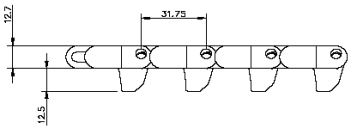
Roller dimension RBP 1255-series

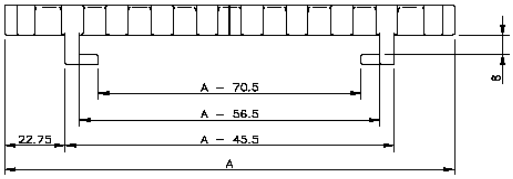


Rollers should rotate freely at all times; therefore we strongly recommend to equip the rollers with bearings.

RBT 1255-Series

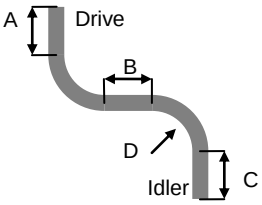
Beltstyle RBT 1255-series





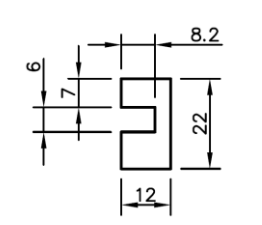
Minimum backflex diameter: 60mm
Minimum end roller diameter: 60mm

Lay-out Guidelines



A	**Minimum straight section drive side** 750mm with normal drive, 500mm with gravity tensioner.
B	**Minimum straight in between 2 curves (S-bend)** 1.5*belt width
C	**Minimum straight section idler side** 500mm
D	**Minimum inside radius** 2 * belt width

Recommended guiding Profile dimensions for RBT 1255-series



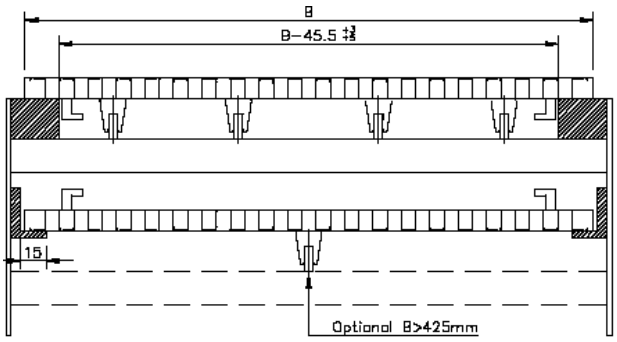
The MCC guiding profile should be used to guide the belt through the curve and along the frame. There are 2 materials available:

- MCC3500: Special polyamide
- MCC4000: Ultra Low Friction UHMWPE

Standard:
Codenr. 10341543 (length of 3m)
ULF:
Codenr. 10383613 (length of 3m)

Straight section RBT 1255-series

Below a cross section drawing is shown with recommended straight section construction

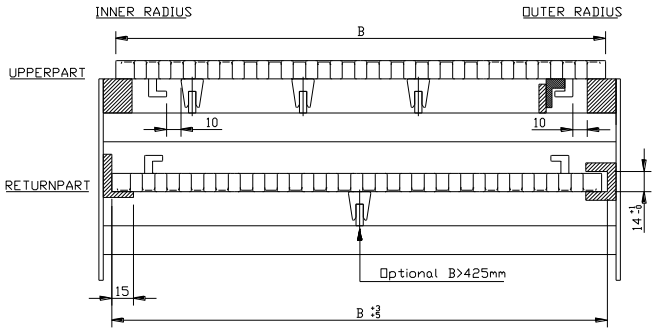


*) For the returnpart, also rotating rollers can be used.

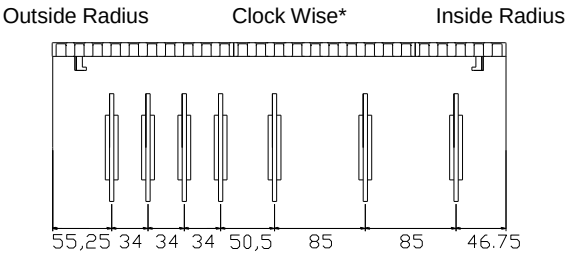
RBT 1255-Series

Curve section RBT 1255-series

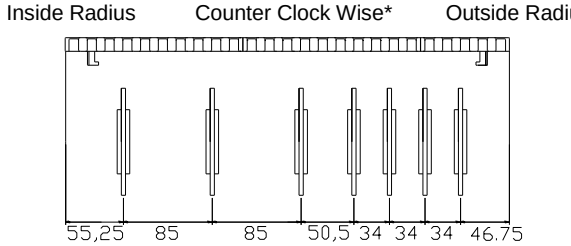
Below a cross section drawing is shown with recommended curve construction



Sprocket position RBT 1255-series

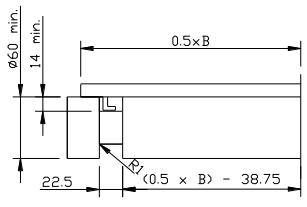


Belt width	Nr. of sprockets	
	Drive	Idler
170 mm	3	2
255 mm	5	3
340 mm	6	4
425 mm	7	5
510 mm	8	6
595 mm	9	7
680 mm	10	8



*Seen in running direction

Roller dimension RBT 1255-series



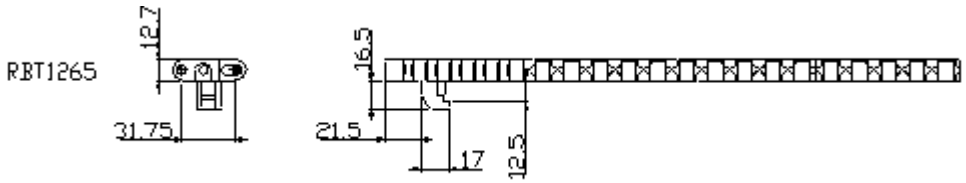
Rollers should rotate freely at all times; therefore we strongly recommend to equip the rollers with bearings.

Additional Notes

- Complete machined UHMWPE curves including curve profiles are available in any angle and for any belt width

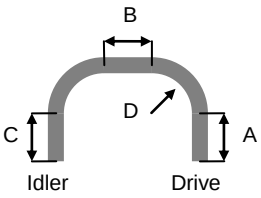
RBT 1265-Series

Beltstyle 1265-series



Minimum backflex diameter: 60mm
Minimum end roller diameter: 60mm

Lay-out Guidelines



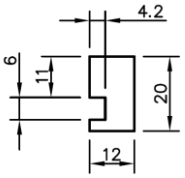
A	**Minimum straight section drive side** 750mm with normal drive, 500mm with gravity tensioner.
B	**Minimum straight in between 2 curves (No S-bend!)** No minimum straight needed
C	**Minimum straight section idler side** 500mm
D	**Minimum inside radius** 2 * belt width

MCC guiding Profile 1265-series

The MCC guiding profile should be used to guide the belt through the curve and along the frame.
There are 2 materials available:

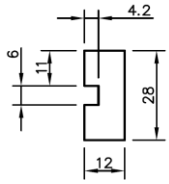
- MCC3500: Special polyamide
- MCC4000: Ultra Low Friction UHMWPE

Profile for curve:



Standard:
Codenr. 10341542
(length of 2.8m, MCC3500)
ULF:
Codenr. 10341558
(length of 2.8m, MCC4000)

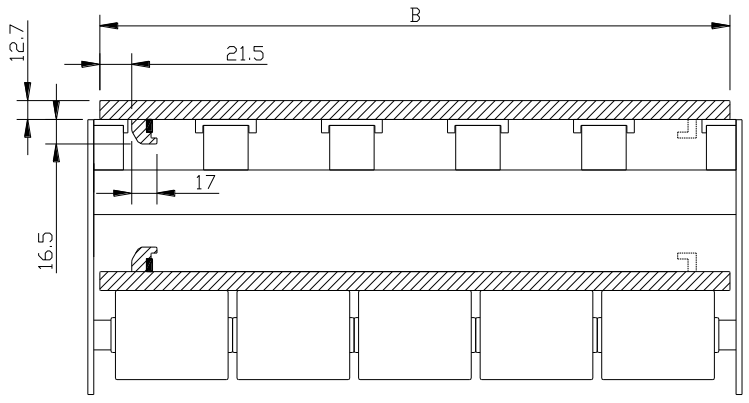
Profile for frame:



Standard:
Codenr.10361339
(length of 1.8m, MCC3500)

Straight section 1265-series

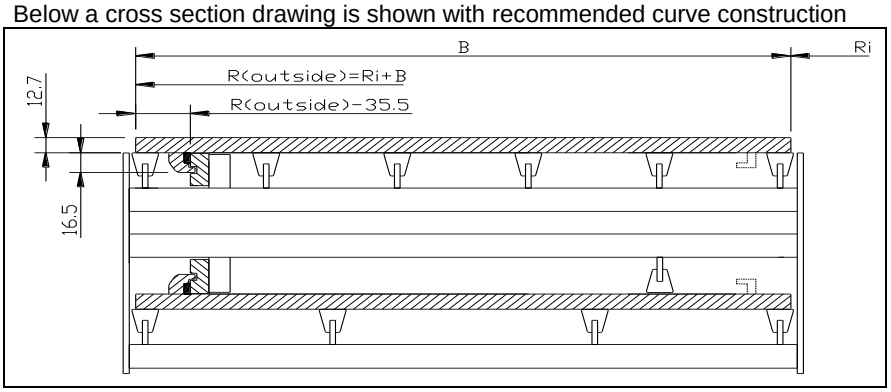
Below a cross section drawing is shown with recommended straight section construction



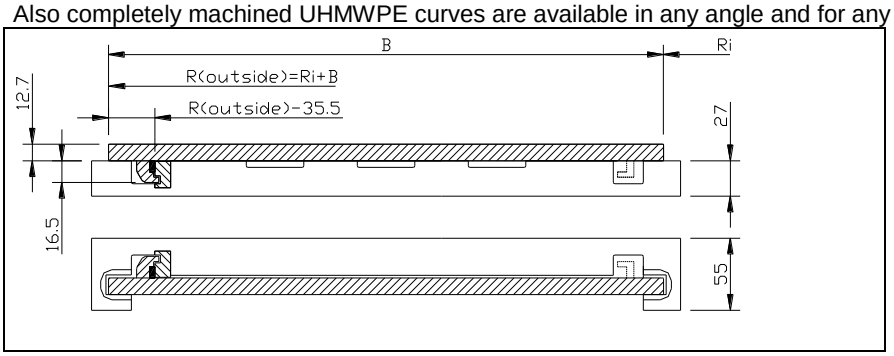
RBT 1265-Series

Curve section 1265-series

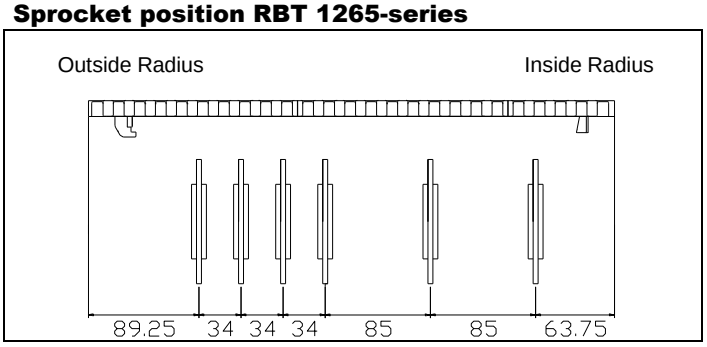
Below a cross section drawing is shown with recommended curve construction



Also completely machined UHMWPE curves are available in any angle and for any belt width.

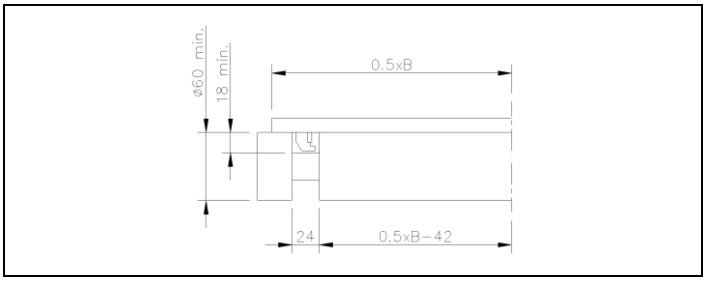


Sprocket position RBT 1265-series



Belt width	Nr. of sprockets	
	Drive	Idler
255 mm	4	3
340 mm	5	4
425 mm	6	5
510 mm	7	6
595 mm	8	7
680 mm	9	8
765 mm	10	9

Roller dimension 1265-series



Rollers should rotate freely at all times; therefore we strongly recommend to equip the rollers with bearings.

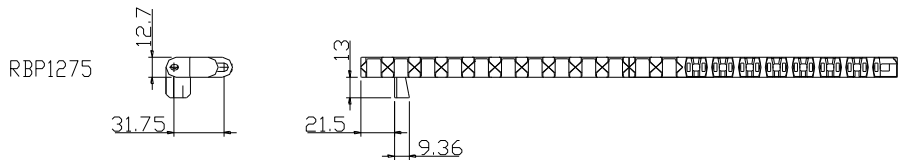
*) For high loads (>500 N) or wide belts (>510 mm) use bigger shaft diameter and / or support the shaft in the centre

Additional Notes

- To reduce friction in the curve section, we can also offer machined curves with roller bearing inserts. Please ask our Engineering for further information.
- We recommend to use roller with 80mm diameter for heavy duty applications.

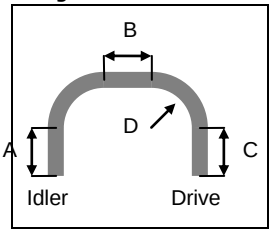
RBP 1275-Series

Beltstyle RBP 1275-series



Minimum backflex diameter: 60mm
Minimum end roller diameter: 60mm

Lay-out Guidelines



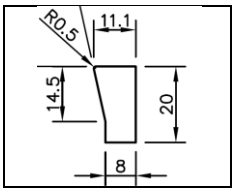
A	**Minimum straight section drive side** 750mm with normal drive, 500mm with gravity tensioner.			
B	**Minimum straight in between 2 curves (No S-bend!)** No minimum straight needed			
C	**Minimum straight section idler side** 500mm			
D	**Minimum inside radius (min R)**			
	Belt width	Min. radius	Belt width	Min. radius
	255	300	680	860
	340	400	765	1020
	425	500	850	1200
	510	600	935	1350
	595	720	1020	1500

MCC guiding Profile RBP 1275-series

The MCC guiding profile should be used to guide the belt through the curve and along the frame.
There are 2 materials available:

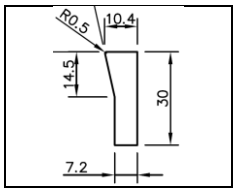
- MCC3500: Special polyamide
- MCC4000: Ultra Low Friction UHMWPE

Profile for curve:



Standard:
Codenr. 10341541
(length of 3m, MCC3500)
ULF:
Codenr. 10383604
(length of 3m, MCC4000)

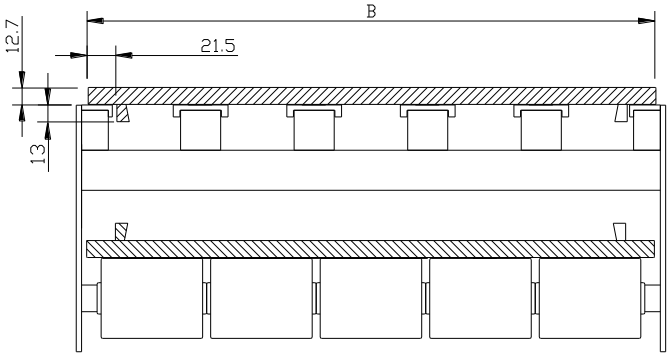
Profile for frame:



Standard:
Codenr.10361334
(length of 1.8m, MCC3500)
ULF:
Codenr. 103836610
(length of 3m, MCC4000)

Straight section RBP 1275-series

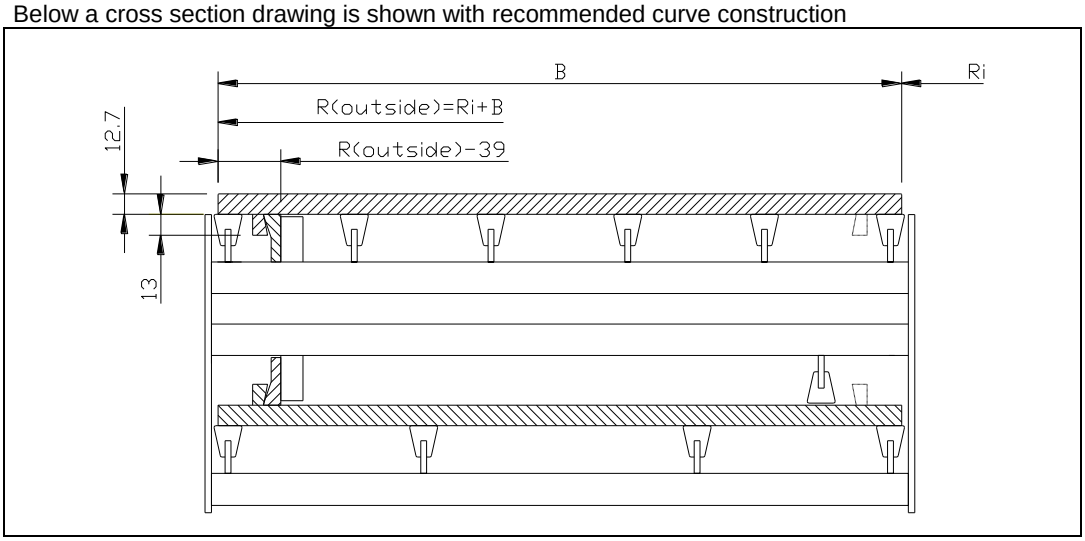
Below a cross section drawing is shown with recommended straight section construction



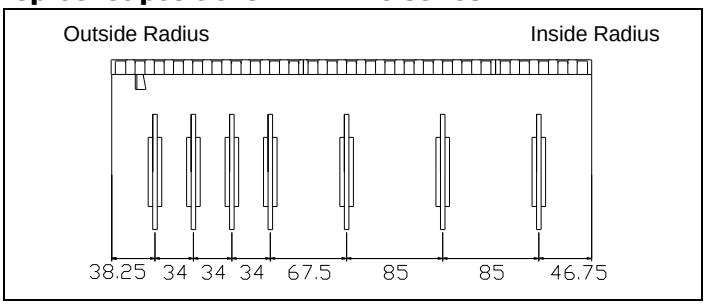
RBP 1275-Series

Curve section RBP 1275-series

Below a cross section drawing is shown with recommended curve construction

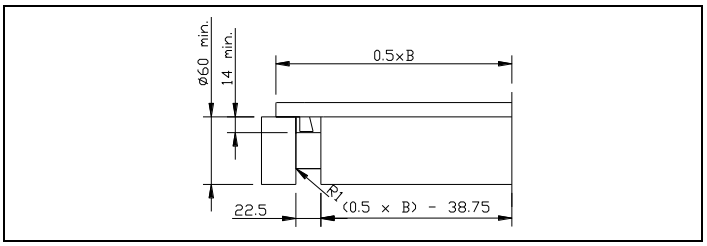


Sprocket positions RBP 1275-series



Belt width	Nr. of sprockets	
	Drive	Idler
255 mm	5	3
340 mm	6	4
425 mm	7	5
510 mm	8	6
595 mm	9	7
680 mm	10	8
765 mm	11	9

Roller dimension RBP 1275-series



Rollers should rotate freely at all times; therefore we strongly recommend to equip the rollers with bearings.

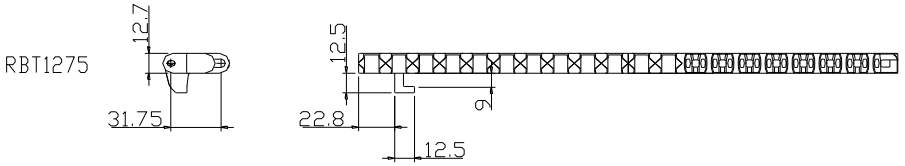
*) For high loads (>500 N) or wide belts (>510 mm) use bigger shaft diameter and/ or support the shaft in the centre

Additional Notes

We recommend to use the MCC machined corner tracks, which allow a simple design and a trouble-free operation.

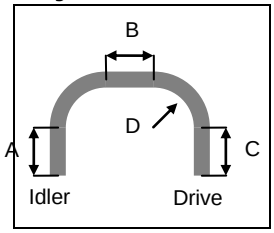
RBT 1275-Series

Beltstyle RBT 1275-series



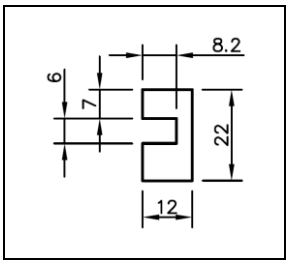
Minimum backflex diameter: 60mm
Minimum end roller diameter: 60mm

Lay-out Guidelines



A	**Minimum straight section drive side** 750mm with normal drive, 500mm with gravity tensioner.			
B	**Minimum straight in between 2 curves (No S-bend!)** No minimum straight needed			
C	**Minimum straight section idler side** 500mm			
D	**Minimum inside radius (min R)**			
	Belt width	Min. radius	Belt width	Min. radius
	255	300	680	860
	340	400	765	1020
	425	500	850	1200
	510	600	935	1350
	595	720	1020	1500

MCC guiding Profile RBT 1275-series



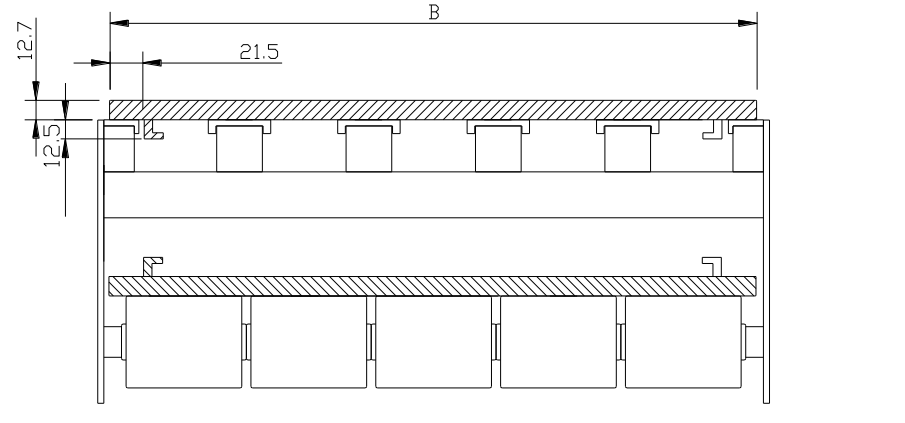
The MCC guiding profile should be used to guide the belt through the curve and along the frame. There are 2 materials available:

- MCC3500: Special polyamide
- MCC4000: Ultra Low Friction UHMWPE

Standard:
Codenr. 10341543 (length of 3m)
ULF:
Codenr. 10383613 (length of 3m)

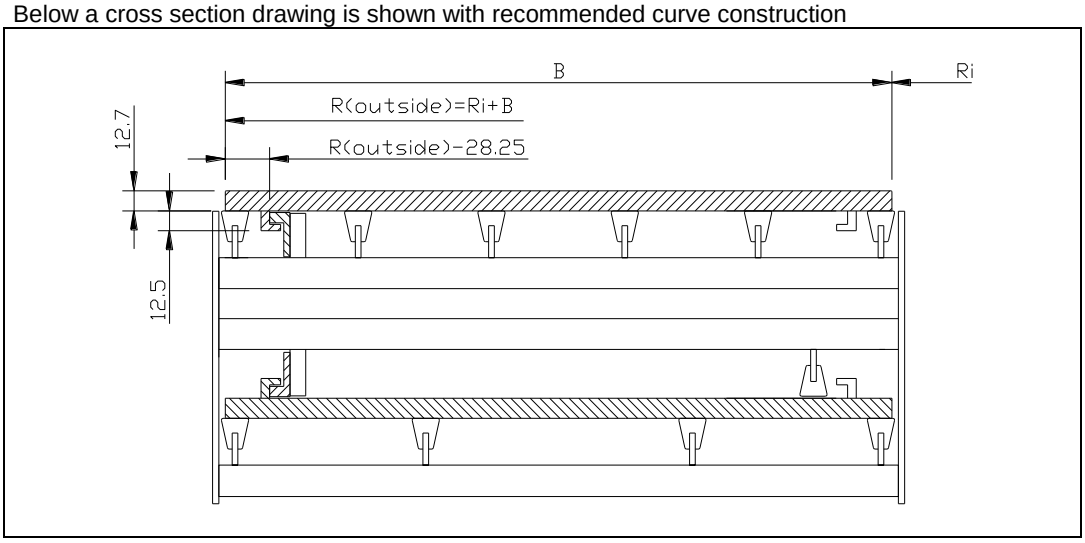
Straight section RBT 1275-series

Below a cross section drawing is shown with recommended straight section construction

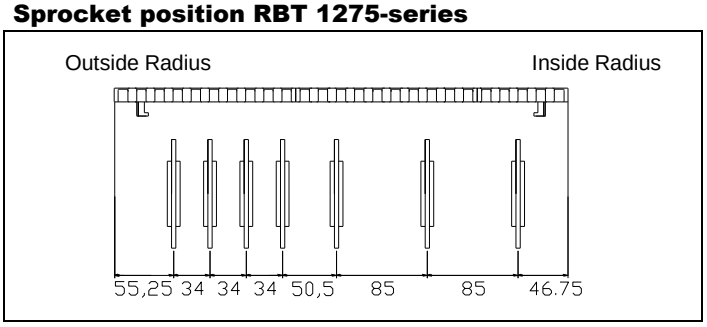


Curve section RBT 1275-series

Below a cross section drawing is shown with recommended curve construction

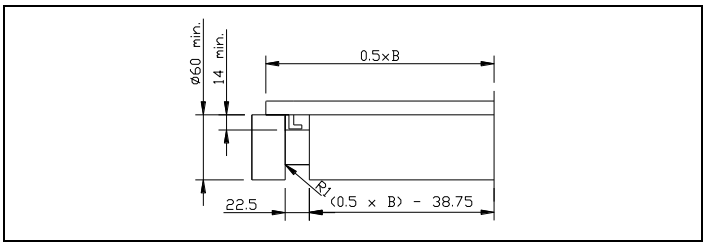


Sprocket position RBT 1275-series



Belt width	Nr. of sprockets	
	Drive	Idler
255 mm	5	3
340 mm	6	4
425 mm	7	5
510 mm	8	6
595 mm	9	7
680 mm	10	8
765 mm	11	9

Roller dimension 1275-series

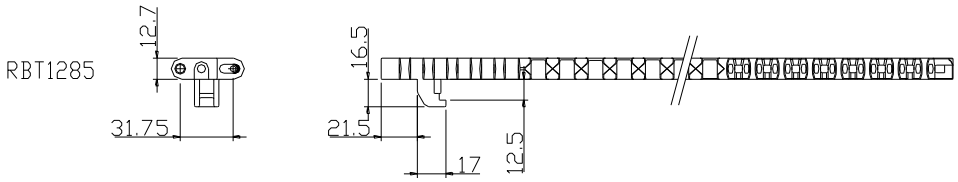


Rollers should rotate freely at all times; therefore we strongly recommend to equip the rollers with bearings.
.

*) For high loads (>500 N) or wide belts (>510 mm) use bigger shaft diameter and/ or support the shaft in the centre

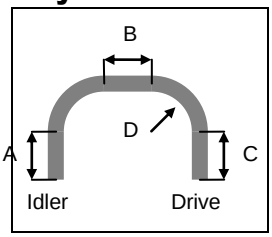
RBT 1285-Series

Belt style RBT 1285-series



Minimum backflex diameter: 60mm
Minimum end roller diameter: 60mm

Lay-out Guidelines



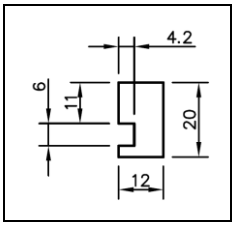
A	**Minimum straight section drive side** 750mm with normal drive, 500mm with gravity tensioner.			
B	**Minimum straight in between 2 curves (No S-bend!)** No minimum straight needed			
C	**Minimum straight section idler side** 500mm			
D	**Minimum inside radius (min R)**			
	Belt width	Min. radius	Belt width	Min. radius
	425	500	765	1020
	510	600	850	1200
	595	720	935	1350
	680	860	1020	1500

MCC guiding Profile RBT 1285-series

The MCC guiding profile should be used to guide the belt through the curve and along the frame.
There are 2 materials available:

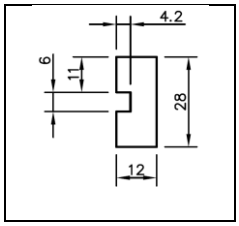
- MCC3500: Special polyamide
- MCC4000: Ultra Low Friction UHMWPE

Profile for curve:



Standard:
Codenr. 10341542
(length of 2.8m, MCC3500)
ULF:
Codenr. 10341558
(length of 2.8m, MCC4000)

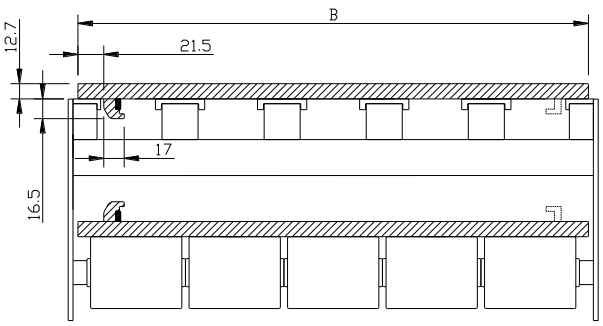
Profile for frame:



Standard:
Codenr.10361339
(length of 1.8m, MCC3500)

Straight section RBT 1285-series

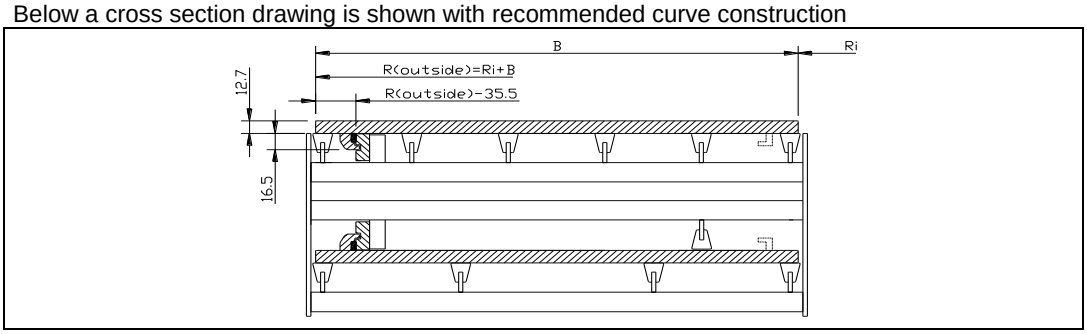
Below a cross section drawing is shown with recommended straight section construction



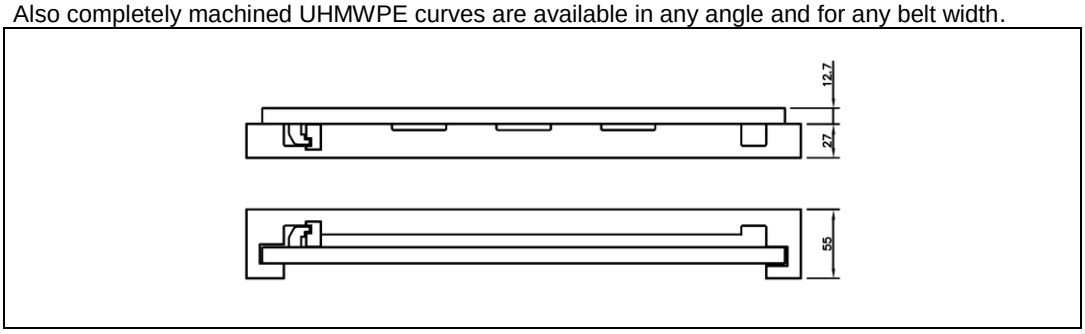
RBT 1285-Series

Curve section RBT 1285-series

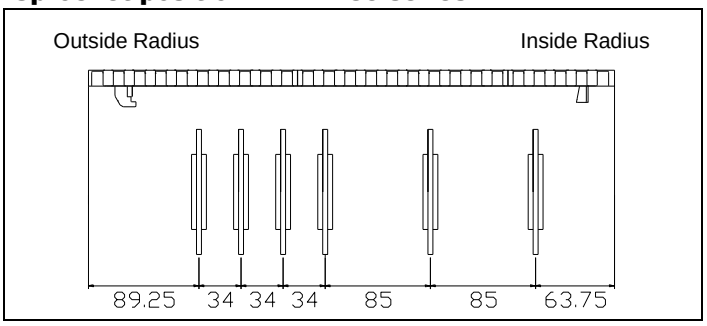
Below a cross section drawing is shown with recommended curve construction



Also completely machined UHMWPE curves are available in any angle and for any belt width.

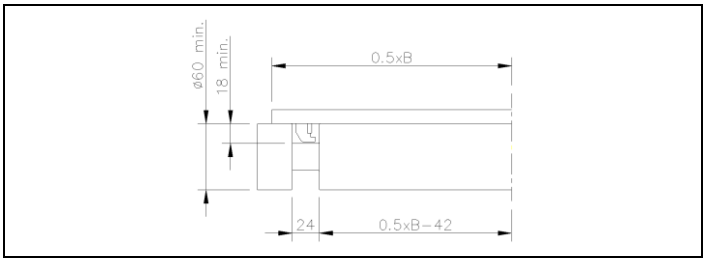


Sprocket position RBT 1285-series



Belt width	Nr. of sprockets	
	Drive	Idler
340 mm	5	4
425 mm	6	5
510 mm	7	6
595 mm	8	7
680 mm	9	8
765 mm	10	9
850 mm	11	10

Roller dimension RBT 1285-series



Rollers should rotate freely at all times; therefore we strongly recommend to equip the rollers with bearings.

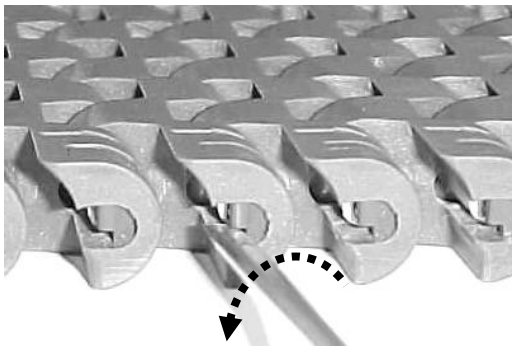
Additional Notes

- Complete machined UHMWPE curves including curve profiles are available in any angle and for any belt width
- We recommend to use rollers with 80mm diameter for heavy duty applications.

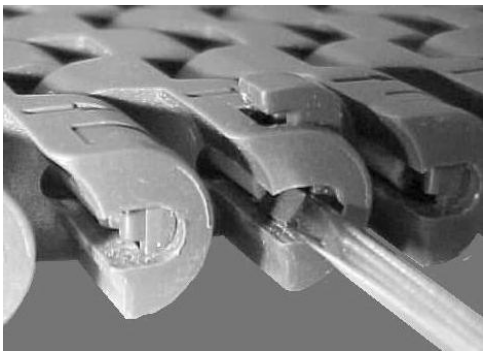
Sideflexing Belts

Installation instructions

505-series



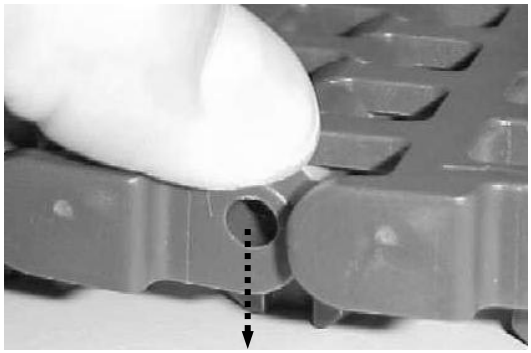
Turn screwdriver counter clockwise to remove clip.



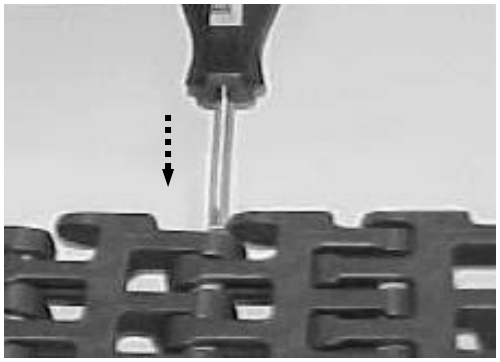
Place screwdriver between clip and belt end.

Please note that 505-series belts have a specific running direction, indicated by the arrow at the bottom.

1255-series belt

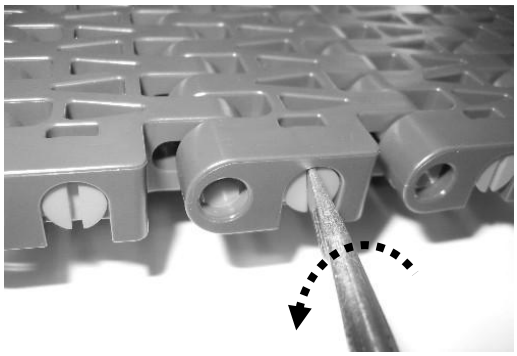


Lift belt out of tracks and position belt on the lugs. Now, push one belt module downwards.

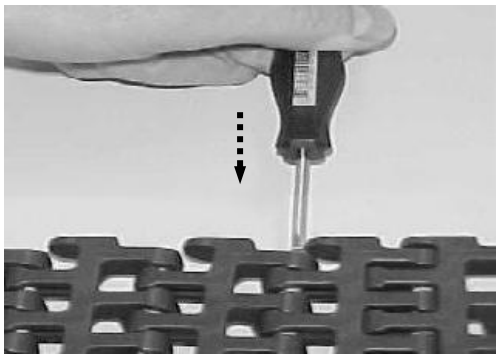


Place screwdriver in opposite end hole and push pin out.

1265-series belt



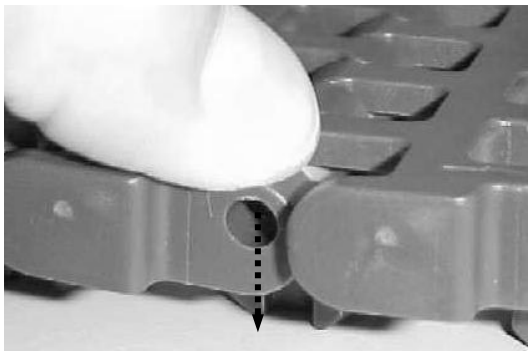
Turn screwdriver counter clockwise to open clip.



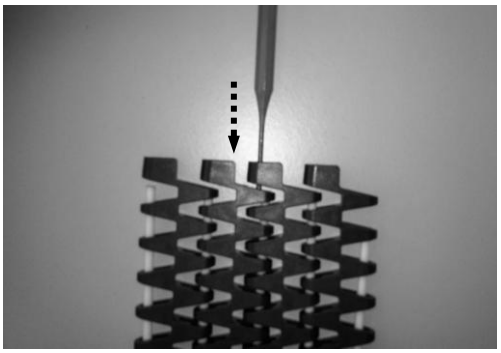
Place screwdriver in opposite end hole and push pin out.

Sideflexing Belts

1275-series belt

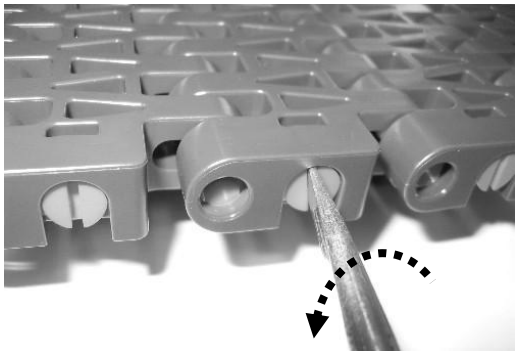


Lift belt out of tracks and position belt on the lugs. Now, push one belt module downwards.

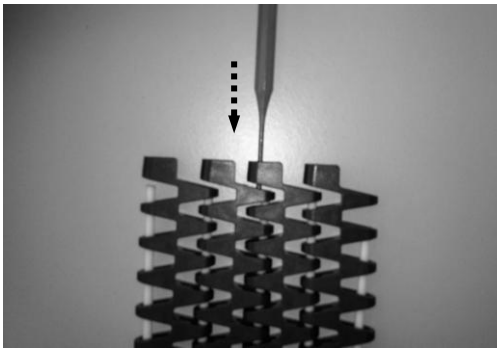


Place screwdriver in opposite end hole and push pin out.

1285-series belt



Turn screwdriver counter clockwise to open clip.



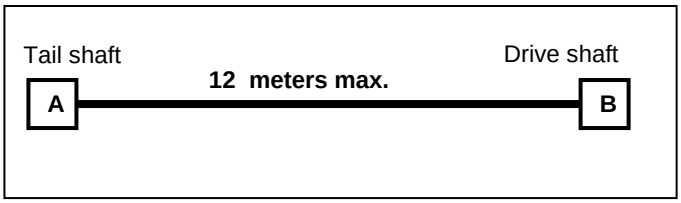
Place screwdriver in opposite end hole and push pin out.

Conveyor Design

Straight running configuration

The length of a conveyor is not unlimited. There is a certain maximum length for each application. The limits are depending on factors like chain type, lubrication, kind of product, load. The exact maximum conveyor length can be calculated with the readily available calculation program.

Generally for straight running conveyors we recommended a max. track length of 12 meters.

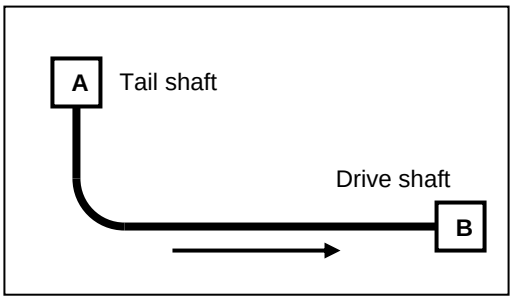


Shorter conveyors are built to obtain lower backline pressure by means of better control facilities. The chain speeds can be controlled using frequency controlled drives. When for instance one conveyor runs full, the chain speed of the preceding conveyor can then slowly be decreased.

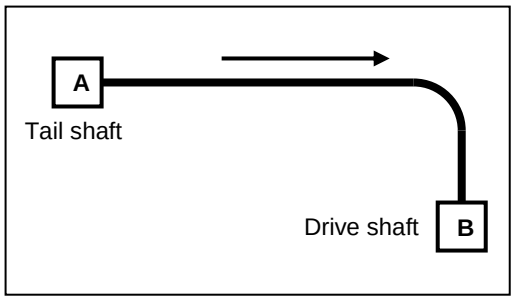
Side flexing configuration

When planning a side-flexing conveyor layout, the designer must consider the following factors that affect chain life:

- Minimize the number of corners whenever possible
- When conveying from point A to point B, design the conveyors so that the drive is positioned furthest from the last corner (see drawing), resulting in lower chain tension and maximizing chain life



Preferred



Avoid

General recommendations

- The Conveyor frame is designed to support the chain on the bottom of the link
- For abrasive applications where debris is a concern, an open design, such as a serpentine design, is preferred over a full width support.
- The serpentine design prevents the buildup of debris in the track and distributes the wear evenly across the bottom of the link.
- Abrasive applications should utilize steel or stainless steel wearstrips
- Wet abrasive applications should utilize stainless steel wearstrips and pins
- Non-abrasive applications should utilize UHMWPE or Nylatron® wearstrips

Maximum chain speed Multiflex chains

Chain type	Maximum speed (m/min)		
	Dry	water	Water & soap
CC-chains	*) Check PV-limit	60**	80**

***) PV-Limit**

Maximum speed values depend on the PV-value of the curve, which represents a combination of pressure and velocity with a specific limit. With rotating corner discs PV-limit is not applicable.

****) Contact Technical Support for higher speeds**

Abrasive conditions or exceeding the speed, results in increased wear, and a decrease in working load.

Slip stick / Pulsating effects

Slip-stick is the changeover from static friction to dynamic friction. Stick-slip can be caused for example by uneven lubrication, long track length, frequency inverters at low frequency or vibrations from the chain return. Slip-stick effects can cause a pulsating chain operation.

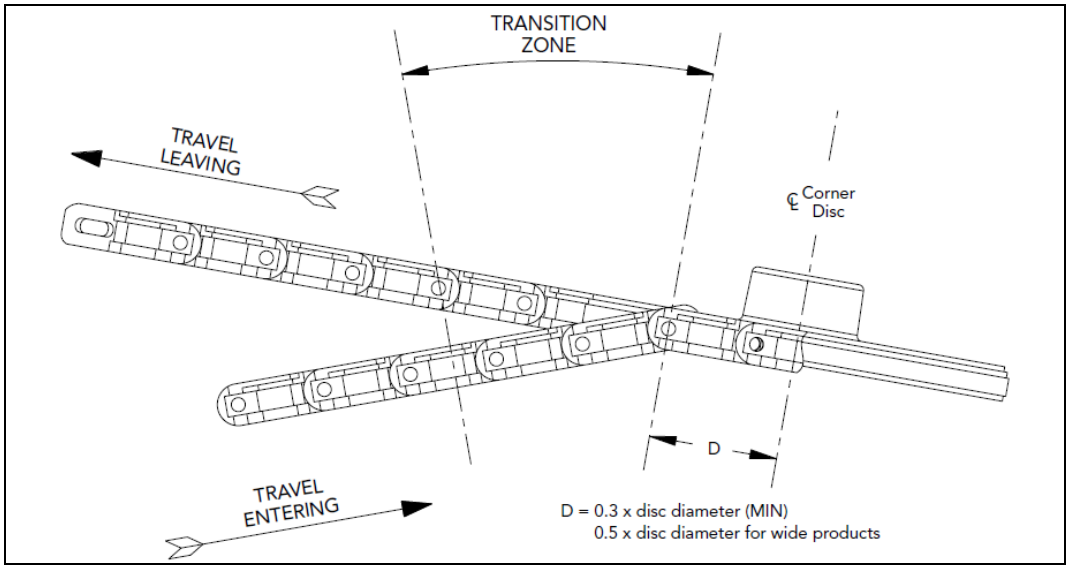
We have the experience that with long, low speed conveyors, the chance of a pulsating operation increases.

To avoid stick-slip, try to influence the points named above. Please contact application engineering whether you need further help.

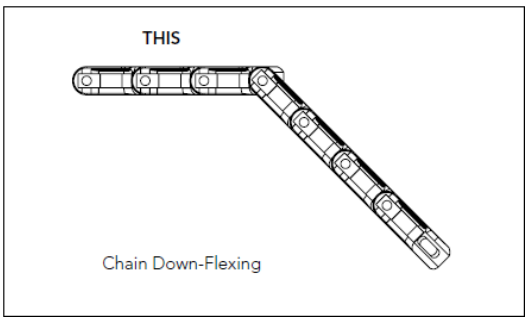
Inclining conveyor configuration

Multiflex chains can be used on inclined conveyors. To assure a proper functioning of these conveyors it is important that:

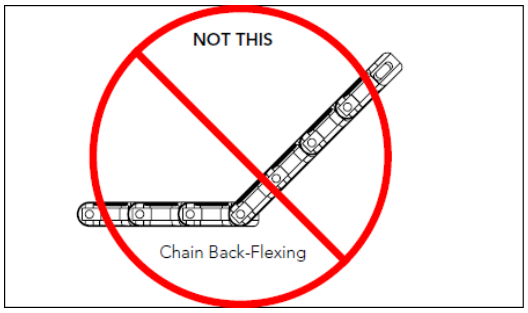
- The chain enters and leaves the corner disc in the same plane as the disc
- In the transition zone, the wearstrips should be curved to accomplish smooth transition from one plane to the next
- The maximum angle of incline or decline for an application depends on product stability and friction between chain and product



- When inclining the chain must pass through a transition zone prior to entering the disc
- The disc should be tipped so that it lies in the same plane as the chain exiting the disc



Any change in angle of chain travel should be made by down flexing the chain as shown



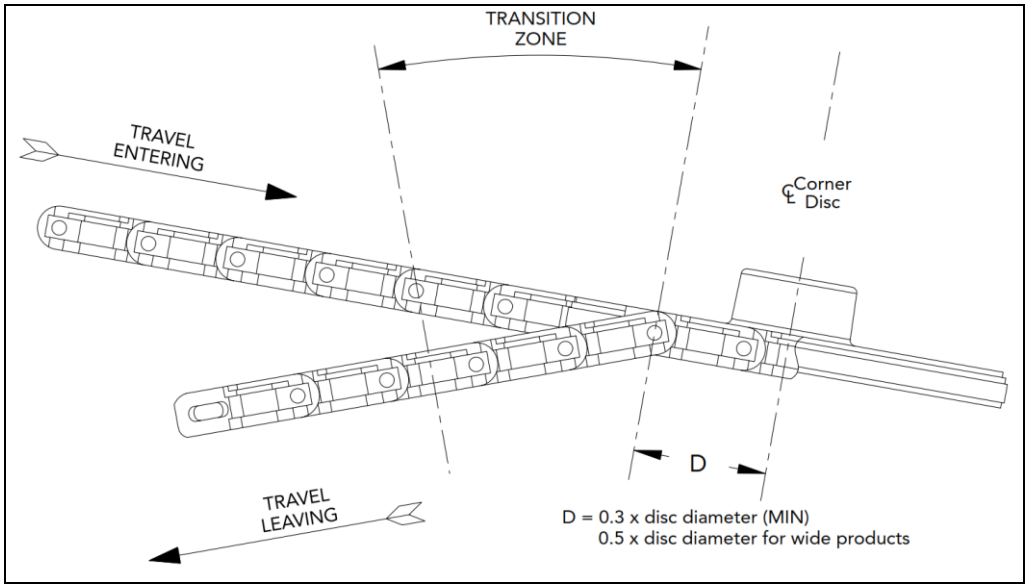
Back flexing through a change in angle will cause the chain to rise out of the conveyor frame

Conveyor Design

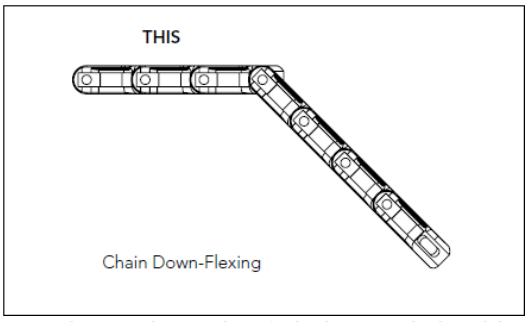
Declining conveyor configuration

Multiflex chains can be used on declined conveyors. To assure a proper functioning of these conveyors it is important that:

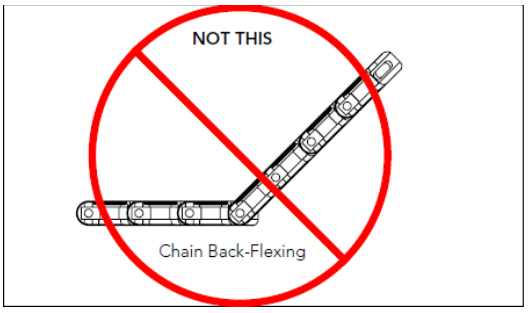
- The chain enters and leaves the corner disc in the same plane as the disc
- In the transition zone, the wearstrips should be curved to accomplish smooth transition from one plane to the next
- The maximum angle of incline or decline for an application depends on product stability and friction between chain and product



- When inclining the chain must pass through a transition only after it has exited the disc
- The disc should be tipped to lie in the same plane as the entering chain



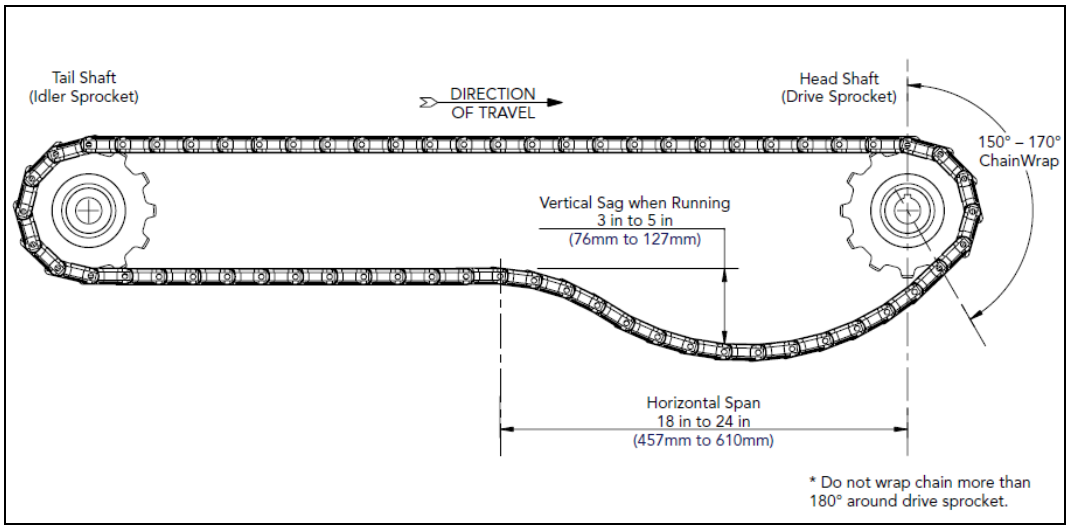
Any change in angle of chain travel should be made by down flexing the chain as shown



Back flexing through a change in angle will cause the chain to rise out of the conveyor frame

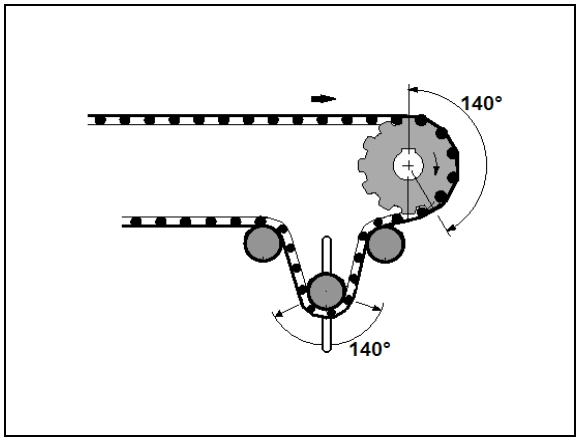
Catenary sag

It is recommended to create a catenary sag just behind the sprocket which provides a complete discharge of the chainload and ensures proper running.



The right vertical catenary sag can usually be obtained automatically by just pulling both ends together and mounting them together. Note the chain can elongate due to strain and wear of the pins and hinge eyes. Therefore it is important to check and adjust the catenary regularly.
The returnpart after the catenary is flat for multiflex chains.

Tensioner construction



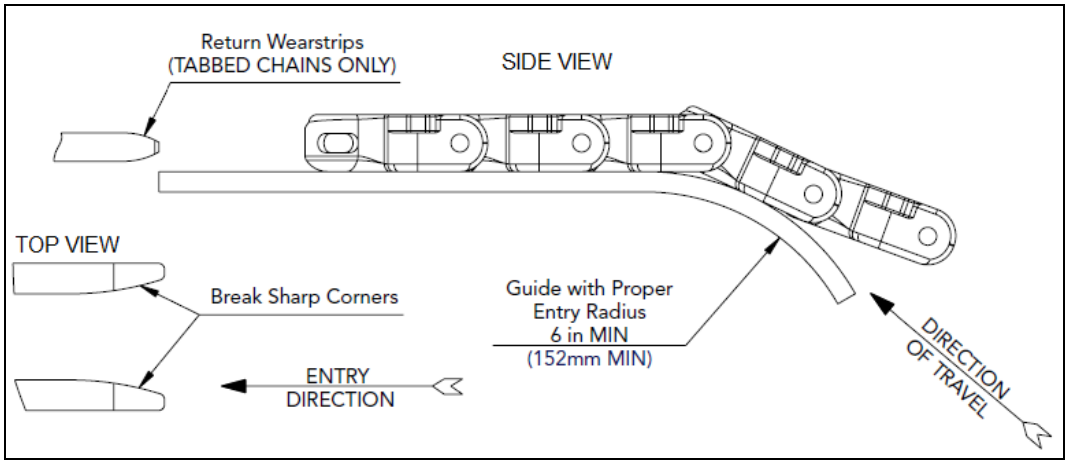
A tensioner construction is only necessary if the conveyor design does not allow a proper catenary sag. A tensioner can also be used with declined conveyors, but in all other cases it is not recommend to tension the chain/belt.

The tensioner roller/sprocket can be fixed on an arm or move up and down in slots in the conveyor sideplates. This will bring constant tension, independent of length differences in the chain.

Conveyor Design

Entry radius for sliding returns

- Provide a generous entry radius to the return section which permits the chain to feed smoothly into the return ways
- The entry radius should be greater than the minimum back-flex radius of the chain (see table below)
- Rexnord recommends a 6 in (152mm)* minimum entry radius to prevent non-uniform wear
- When returning a chain on its TABs, guide the chain onto the return wearstrips using a guideshoe (see table on page EM-MF-09 for proper guide clearance)
- At the entry of the return wearstrips, provide rounded corners to prevent catching or snagging of the chain flights



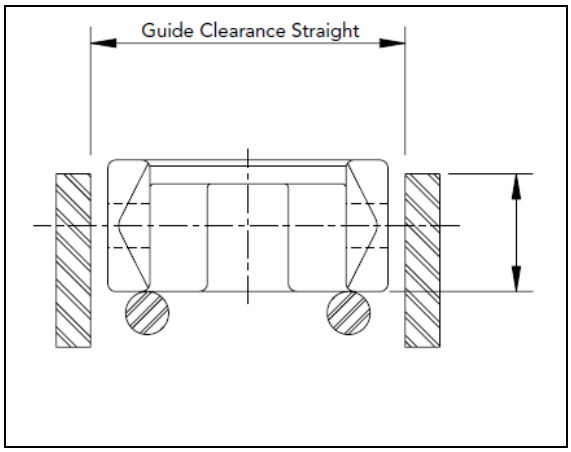
* For 1775 a minimum entry radius of 80mm is required; for 1785 a minimum entry radius of 140mm is required

Back-Flex radius Table	
Chain Type	Min. Back-Flex radius
1700(TAB), AC1700, 1702, 1720, 1755	38.1 mm
2565	88.9 mm
1757TAB	101.6 mm
1765	63.5 mm
1775	80.0 mm
1785	140.0 mm
1710(TAB)	0.0 mm
1713(TAB)	1000.0 mm
600(TAB),631TAB,1400(TAB)1431TAB	50.0 mm

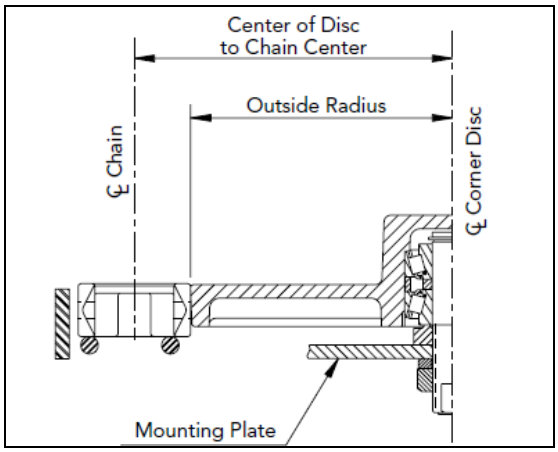
Carry Ways

Guide clearance is critical for Multiflex chains. For guide clearance dimensions of individual chains, see table on page EM-MF-09 or product catalogue

Side-flexing – straight edge design



Typical Construction – Straight section



Typical construction – Corner section utilizing corner disc

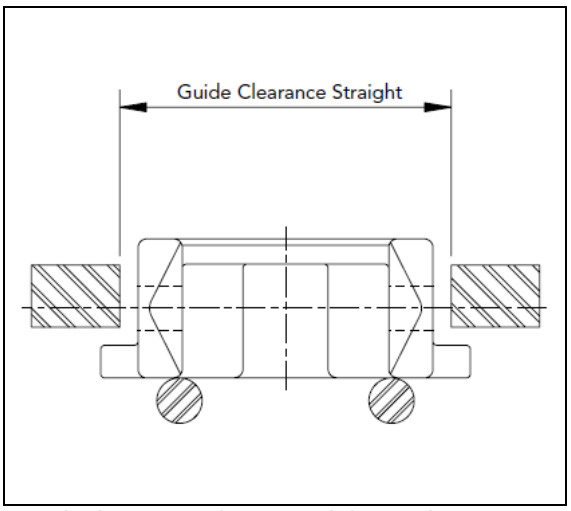
- Chain can be lifted out of straight section for cleaning or inspection
- Longer conveyors can be achieved with the use of corner discs

Conveyor Design

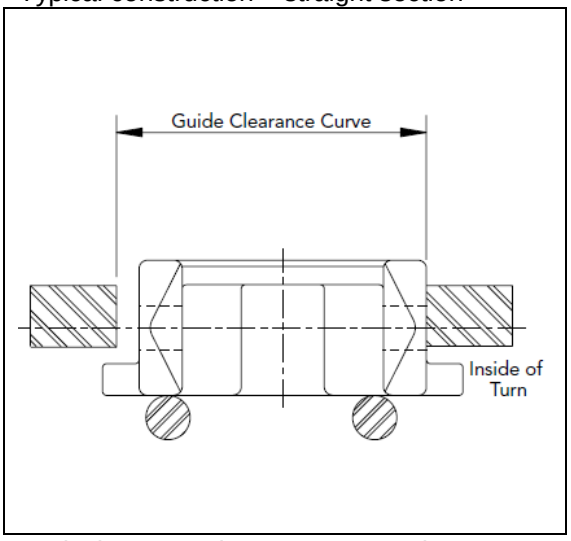
Carry Ways

Guide clearance is critical for Multiflex chains. For guide clearance dimensions of individual chains, see table on page EM-MF-09 or product catalogue

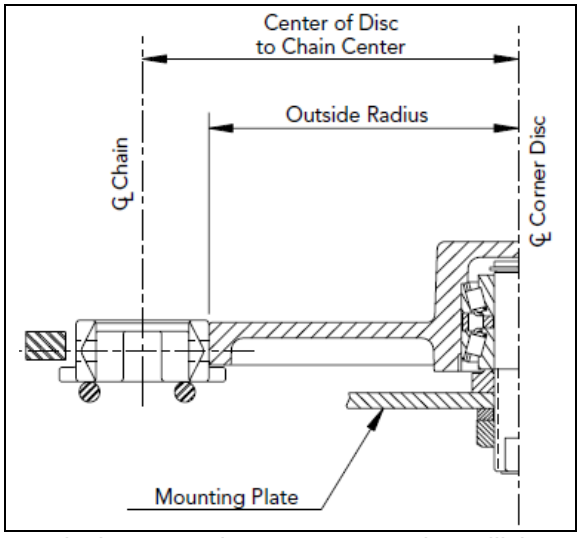
Side-flexing – TAB design



Typical construction – straight section



Typical construction – Corner section utilizing corner track



Typical construction – Corner section utilizing corner disc

- Positive retention.
- TABs hold chain down in incline or decline applications.
- Chain top surface wear is decreased if the TAB return in utilized.
- Longer conveyors can be achieved with the use of corner discs.
- Once assembled, the TAB chain cannot be lifted out of the conveyor track.

Side-flex radius table

Chain style	Chain Width	Minimum side-flex radius
1700	55.0 mm	140.0 mm
AC 1700	55.0 mm	140.0 mm
1702	53.1 mm	140.0 mm
1710	98.0 mm	140.0 mm
1713	253.0 mm	500.0 mm
1720	55.0 mm	140.0 mm
1757	82.6 mm	152.0 mm
1765	55.0 mm	125.0 mm
1775	70.0 mm	150.0 mm
1785	114.3 mm	170.0 mm
2565	88.9 mm	241.0 mm
CC600	42.0 mm	457.0 mm
CC631	42.0 mm	457.0 mm
CC1400	50.0 mm	660.0 mm
CC1431	50.0 mm	660.0 mm

Multiflex chain track details

Chain style	Hold down Style	Guide clearance Straight	Guide clearance Corner	Corner wearstrip Thickness
1700	N/A	58.0 mm	N/A	Must use Corner disc
	TAB	58.0 mm	70.0 mm**	13.0 mm
AC 1700	N/A	58.0 mm	N/A	Must use Corner disc
1702	N/A	56.8 mm	N/A	Must use Corner disc
1710	N/A	58.0 mm	N/A	Must use Corner disc
	TAB	58.0 mm	70.0 mm**	18.0 mm
1713	N/A	58.0 mm	N/A	Must use Corner disc
	TAB	58.0 mm	70.0 mm**	18.0 mm
1720	N/A	58.0 mm	N/A	Must use Corner disc
1757	TAB	61.9 mm	*	*
1765 ZeroGap™	N/A	58.0 mm	N/A	Must use Corner disc
1775 ZeroGap™	TAB	18.0 mm	*	*
1785 ZeroGap™	TAB	53.5 mm	N/A	Must use corner disc
2565 ZeroGap™	N/A	95.4 mm	N/A	Must use Corner disc
CC600	N/A	45.0 mm	N/A	N/A
	TAB	58.0 mm	58.0 mm	Machined curves available
CC631	TAB	58.0 mm	58.0 mm	Machined curves available
CC1400	N/A	53.0 mm	N/A	N/A
	TAB	69.0 mm	69.0 mm	Machined curves available
CC1431	TAB	69.0 mm	69.0 mm	Machined curves available

* Rexnord only offers corner discs for these chains; however corner tracks can be utilized.

** Rexnord offers special machined curves and corner discs for these chains.

Conveyor Design

Wearstrip Materials

Metal wearstrips

Metal wearstrips can be used in most situations using plastic chains and are strongly recommended in abrasive environments.

Stainless steel:

- Recommended for corrosive, abrasive or high temperature applications
- Abrasive particles are less likely to imbed in metal wearstrips in comparison to plastic
- A cold rolled austenitic grade with a hardness of at least 25Rc is recommended which offers the best corrosion resistant properties
- Hardness is more critical than grade for better wear resistance
- Hot rolled AISI 304 (Werkstoff-Nr. 1.4301) is **not** recommended as wearstrip material.

Plastic wearstrips

Friction is low compared to steel wearstrips. Two types of plastic are suitable to be used as a wearstrip material.

UHMWPE / ULF:

- Most common used wearstrip material with extreme low friction;
- Excellent resistance against many chemicals;
- Virtually no moisture absorption, therefore very suitable for lubricated lines;
- Good dimension stability;
- Reduces some of the noise conveyors produce;
- Suitable for dry running conveyors with speeds up to 100 m/min (ULF) or up to 60 mtr/min (UHMWPE);
- Recommendation: RAM-Extruded UHMWPE (see page EM-TT-08) or Rexnord ULF.

Polyamide:

- Only suitable for dry applications
- Relatively high moisture absorption which makes the material expand;
- Polyamide is also used with additives to reduce the coefficient of friction;
- Suitable for dry running high speed conveyors.

Recommended wearstrip materials

Wearstrip material	Steel chains		Plastic chains	
	Dry	Lubr.	Dry	Lubr.
UHMWPE / ULF	+	+	+ [1)]	+ [2)]
Polyamide	+/-	-	+/-	-
Stainless steel	-	-	+	+

\+ Recommended
+/- Satisfactory
\- Not recommended
[1)] Up to 60 m/min in non abrasive conditions
[2)] Only in non abrasive conditions

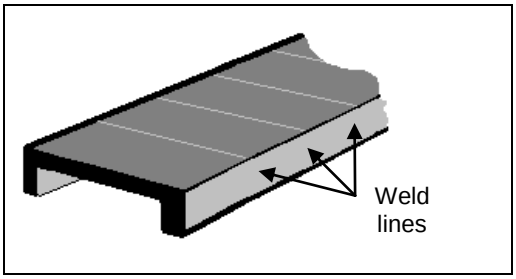
It is not recommended to use the same material for the wearstrip and chain.

UHMWPE Wearstrip Installation

RAM-extruded wearstrips

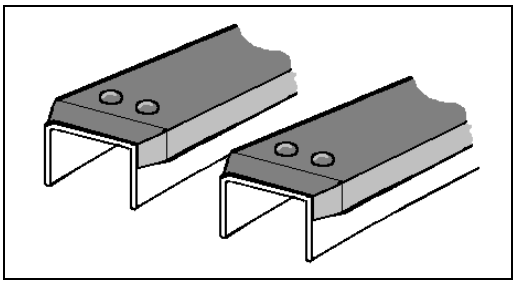
We recommend to use RAM-extruded wearstrips. Main benefits of RAM-extruded UHMWPE wearstrips is that less debris will embed in the material in comparison to worm extruded or machined UHWMPE. This will results in less chain / belt wear.

Ram-extruded wearstrips can be recognized by weld lines which occur with each ram stroke, see drawing.



Chamfering of wearstrips

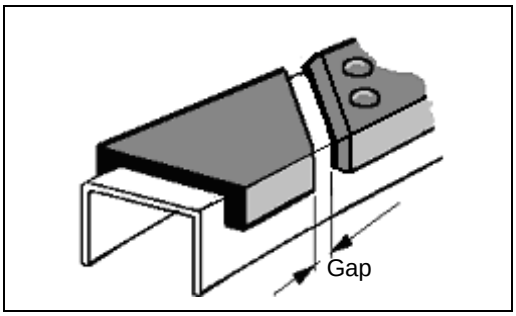
Wearstrips should always be chamfered at the beginning of the strip where they are fixed. Chamfering reduces the risk of chain-obstruction resulting in a smooth operation. The wearstrips should be chamfered at the sides and at the top.



Splitting the wearstrips

On straight sections with a length of more than 3 meters, or for high (40º - 70ºC) application temperatures, we recommend to divide the wearstrip into several sections, because of the thermal expansion of the strips.

It is recommended to cut the wearstrips at 45º angles to provide smooth chain/ belt transfers. Make sure only the infeed side of the wearstrip is fixed to the conveyor frame to avoid bulging of the wearstrips.



The gap depends on the expected elongation due to e.g. thermal expansion, see drawing.

Calculation example

For Marbett RAM-Extruded UHMWPE material the expansion coefficient is 0.2 mm/m/ºC.
A temperature increase of 20ºC would elongate a 3 meter wearstrip with:

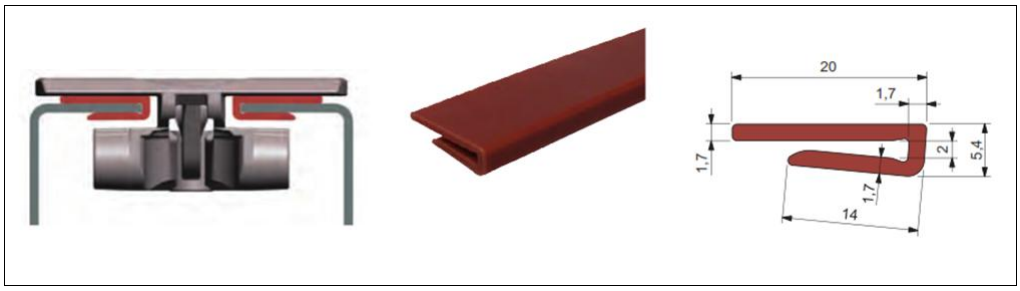
20ºC * 3mtr * 0.2=12 mm

In this case, the gap between the wearstrips should be a bit larger than 12 mm.

We recommend a maximum wearstrip length of 6 meters with UHWMPE wearstrips.

Special Wearstrip 1775 ZeroGap™

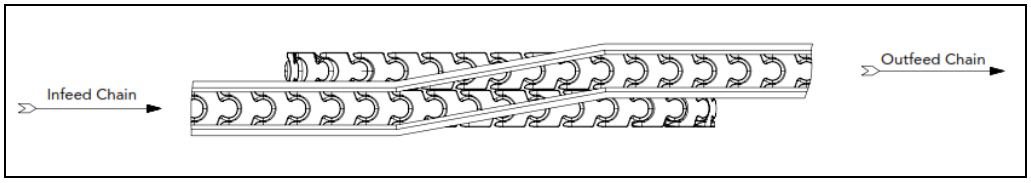
For the 1775 ZeroGap™ chain is a special wearstrip available.
Codenr.10372850 (Length of 3.05m)



Transfers

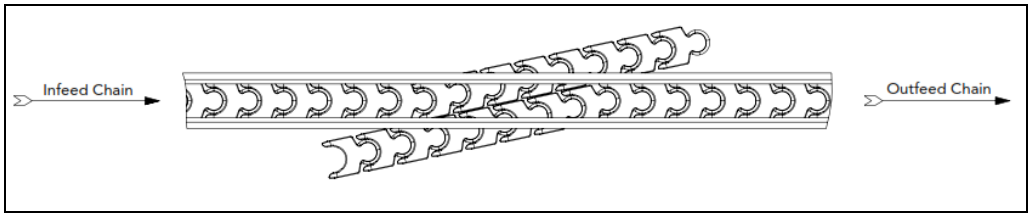
Smooth transfers of the conveyed product from one chain to another is essential. The various methods are described below:

Side transfer



- Adjacent strands of chain should share a common wearstrip
- No stranded products

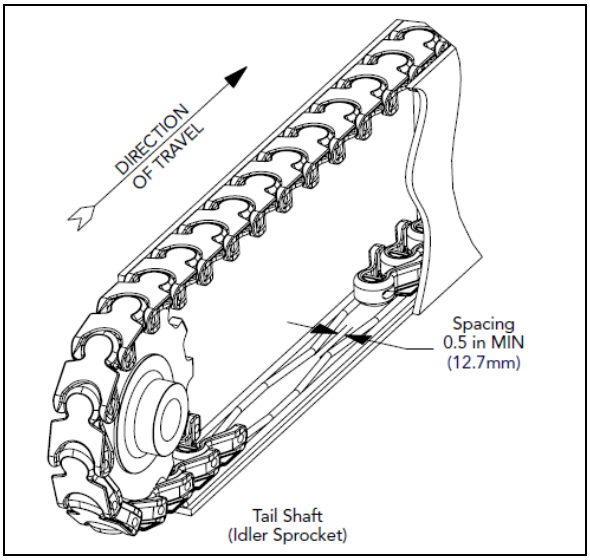
Inline transfer



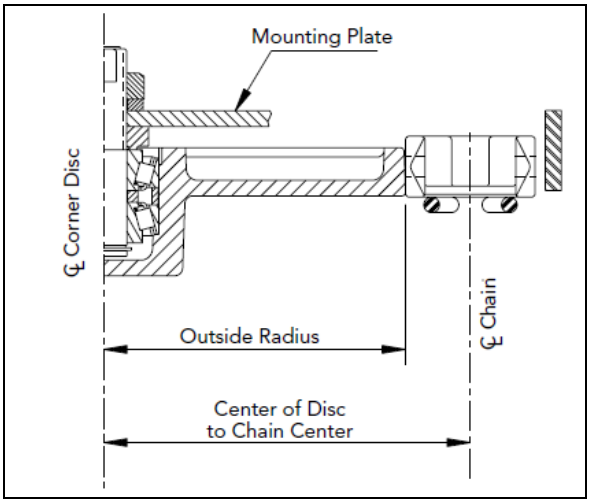
- Adjacent strands of chain should share a common wearstrip
- Allows products to remain in a straight line
- No stranded products

Return ways – Serpentine style return

- A wide selection of chain returns are possible with Multiflex chains which offers considerable conveyor design freedom.
- The chain is fully supported
- Allows for drainage and the passage of foreign material



- The corner disc in the return section is mounted in the same manner as in the Carry section
- Depending on chain design, discs may have to be mounted upside down in the return



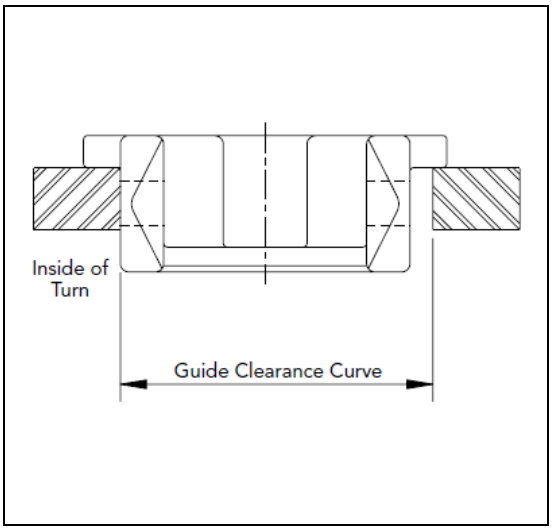
When returning chain with molded inserts (HPM), caution should be taken to ensure that the inserts do not interfere with the return elements.

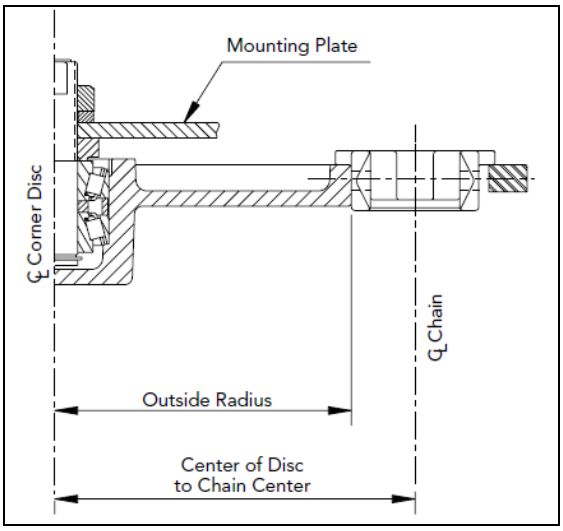
Possible solutions:

- Return the chain on its TAB's
- Return the chain on the outer edge of the links via rollers or wearstrips

Returnways – Sepentine style return

Side flexing – TAB design





- The corner disc in the return section is mounted in the same manner as in the carry section
- Depending on chain design, discs may have to be mounted upside down in the return

Sprocket and wearstrip location

- The distance from the end of the wearstrip to the sprocket shaft centerline should equal dimension “C”; otherwise the wearstrip will interfere with the free articulation of the chain as it enters the sprocket.
- The leading edges of the wearstrip should be beveled
- The following formulas and dimensions used in conjunction with the figure will give the proper shaft and wearstrip positioning:

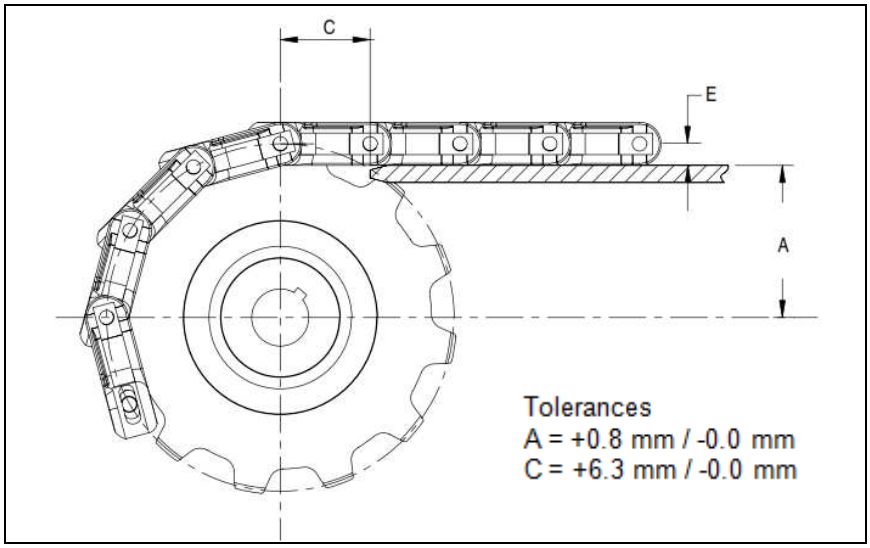
Sprocket location for conventional chains:

A = (Pitch diameter / 2) – E
C = One chain pitch (See table below)

“C” equals one chain pitch which ensures support under the chain at all times.

Example:
For a 1700 chain utilizing a 10T sprocket:

A = (Pitch diameter / 2) – E
A = (161.7 mm / 2) – 12.0 mm = 68.9 mm
C = 50.0 mm



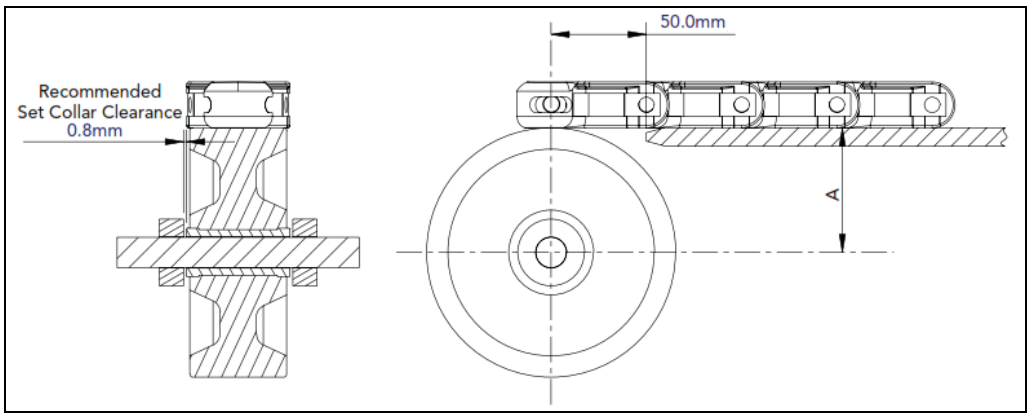
Shaft drop values

Chain Series	Chain Numbers	“C” Dimension	“E” Dimension
1700	1700, AC 1700	50.0 mm	12.0 mm
1702	1702	50.0 mm	12.3 mm
1710	1710, 1710TAB	50.0 mm	12.0 mm
1713	1713, 1713TAB	40.0 mm	6.35 mm
1720	1720	50.0 mm	12.0 mm
1765	1765	50.0 mm	12.0 mm
2565	2565	76.3 mm	17.4 mm
600	600, 600TAB, 631TAB	63.5 mm	14.3 mm
1400	1400, 1400TAB, 1431TAB	82.5 mm	19.0 mm

For 1757, 1775 ZeroGap and 1785 ZeroGap chain see page EM-TT-10

Idler wheel and sprocket locations (stationary shafts only)

For proper location and smooth operation, the idler wheels should be mounted slightly below the top of the wearstrips.



Shafting for stationary tail shaft

Recommended materials:

- Carbon steel (Dry environments only)
- Stainless steel

Suggested hardness

- 25 to 30 Rc

Suggested Surface finnish:

- 63 µ-in Ra

Rexnord recommends rotating shafts in bearings. If bearings are not used, the following are guidelines for operating Multiflex sprockets on stationary shafts:

Sprocket	Maximum recommended chain speed
Acetal	0 – 15 mtr/min
UHMWPE	0 – 15 mtr/min
Nylon	0 – 30 mtr/min
Bronze Bushing	0 – 150 mtr/min
Bearings	Recommended for speeds > 90 mtr/min

Materials

Material Prefix	Description	Page	Primary Components	FDA Approved
AS	Anti-Static	MA – 1	Electrically conductive acetal (POM)	No
BHT	Blue High Temperature	MA – 12	Polypropylene (PP)	Yes
BLT	Blue Low Temperature	MA – 15	Polyethylene (HDPE)	Yes
BRSM	Black Cut Resistance with Red Links	MA – 2	Cut and abrasive wear resistant acetal (POM)	Yes
BSM	Black Cut Resistance	MA – 28	Cut and abrasive wear resistant acetal (POM)	Yes
BUV	Blue Acetal Ultraviolet Resistant	MA – 5	Ultraviolet resistant acetal (POM)	No
BYSM	Black Cut Resistance with Yellow Links	MA – 2	Cut and abrasive wear resistant acetal (POM)	Yes
CR	Extreme Chemical Resistant	MA – 3	Fluorinated polymer	Yes
D	Plain Acetal	MA – 4	Acetal (POM)	No
DUV	Plain Acetal Ultraviolet Resistant	MA – 5	Ultraviolet resistant acetal (POM)	No
EPDM	Ethylene Propylene Rubber	MA – 6	Ethylene propylene rubber	No
FR	Flame Retardant	MA – 7	Flame retardant polyester (PBT)	No
FR-ESD	Flame Retardant Electrostatic Dissipative	MA – 33	High capacity electrostatic dissipative acetal (POM)	No
GTC	Grey Tough Composite	MA – 8	High strength, impact modified composite	No
HCAS	High Capacity Anti-static (Black)	MA – 32	High capacity Anti-static acetal (POM)	No
HP	High Performance	MA – 9	High performance, internally lubricated acetal (POM)	Yes
HS	Heat Stabilized	MA – 11	Heat stabilized nylon (PA)	No
HT	High Temperature	MA – 12	Polypropylene (PP)	Yes
HTB	Black High Temperature	MA – 12	Polypropylene (PP)	Yes
KHT	Khaki High Temperature	MA – 12	Polypropylene (PP)	Yes
LF	Low Friction	MA – 14	Low friction acetal (POM)	Yes
LT	Low Temperature	MA – 15	Polyethylene (HDPE)	Yes
MR	Melt Resistant	MA – 16	Melt resistant nylon (PA)	No
Neoprene	Neoprene	MA – 17	Neoprene	No
P	Chemical Resistant	MA – 18	Polyester (PBT)	Yes
PS®	Platinum Series	MA – 19	High speed, Platinum Series internally lubricated acetal (POM)	Yes
PSX®	Platinum Series	MA – 20	High speed, Platinum Series internally lubricated acetal (POM)	Yes
RHT	Red High Temperature	MA – 12	Polyethylene (HDPE)	Yes
RSM	Red Cut Resistant	MA – 28	Cut and abrasive wear resistant acetal (POM)	Yes
RUV	Red Acetal Ultraviolet Resistant	MA – 5	Ultraviolet resistant acetal (POM)	No
S	Carbon Steel	MA – 21	Carbon Steel	No
SMB	Blue Cut Resistant	MA – 28	Cut and abrasive wear resistant acetal (POM)	Yes
SRMB	Blue Cut Resistant with Red End Links	MA – 22	Cut and abrasive wear resistant acetal (POM)	Yes
SS	Stainless Steel	MA – 22	Austenitic stainless steel	Yes
SSB	Stainless Steel Low Magnetic	MA – 23	Low ferromagnetic austenitic stainless steel	Yes
SYMB	Blue Cut Resistant with Yellow End Links	MA – 2	Cut and abrasive wear resistant acetal (POM)	Yes
USP	Ultra Stabilized Polypropylene	MA – 27	Polypropylene (PP) and chemical stabilizers	Yes
WD	White Plain Acetal	MA – 4	Acetal (POM)	No
WHP	White High Performance	MA – 9	High performance, internally lubricated acetal (POM)	Yes
WHT	White High Temperature	MA – 12	Polypropylene (PP)	Yes
WLF	White Low Friction	MA – 14	Low friction acetal (POM)	Yes
WLT	White Low Temperature	MA – 15	Polyethylene (HDPE)	Yes
WSM	White Cut Resistant	MA – 28	Cut and abrasive wear resistant acetal (POM)	Yes
XLA	Internally Lubricated Polyacetal (Grey)	MA – 30	Internally lubricated polyacetal (POM)	Yes
XLG	Low Friction Acetal (Green)	MA – 31	Internally lubricated polyacetal (POM)	Yes
YSM	Yellow Cut Resistant	MA – 28	Cut and abrasive wear resistant acetal (POM)	Yes
YUV	Yellow Acetal Ultraviolet Resistant	MA – 5	Ultraviolet resistant acetal (POM)	No

AS

Brief Description

Formulated to reduce or eliminate nuisance static buildup that can occur while conveying products or during product accumulation. Used to dissipate nuisance sparks for Class II type static environments only. Please contact Application Engineering at 262.376.4800 for specific uses for this material.

Primary Components

Electrically conductive acetal (POM)

General Information

Prefix	Material	Temperature						FDA Approval
		Fahrenheit			Celsius			
		min	max		min	max		
			dry	wet		dry	wet	
AS	Anti-Static (Black)	0	+180	NR	-18	+82	NR	No

Friction Factors Between Material and Product

Operating Condition	Product Material						
	Aluminum	Returnable Glass Bottles**	Non-Returnable Glass Bottles	Paper	Plastic (crates, shrink wrap, etc)	PET	Steel
Dry	0.25	0.27	0.20	0.33	0.25	0.25	0.30
Water	NR	NR	NR	NR	NR	NR	NR
Soap and Water	NR	NR	NR	NR	NR	NR	NR
Oil	NR	NR	NR	NR	NR	NR	NR

Friction Factors Between Material and Wearstrips

Operating Condition	Wearstrip Material		
	Carbon and Stainless Steel	UHMWPE	Nylatron®
Dry	0.30	0.25	0.25
Water	NR	NR	NR
Soap and Water	NR	NR	NR
Oil	NR	0.16	0.16

Regulatory Information

1. Types of Static Environments:
   Class I: Static spark causes explosion. Use stainless steel chain materials.
   Class II: Static spark is a nuisance charge causing slight shock, possible circuit damage or electrical malfunction.
2. Electrical Properties: Surface resistivity = 10^3 Ω/sq.
3. Wearstrip Recommendations: Wearstrips must be grounded to the conveyor frame and must be electrically conductive to be effective. The conveyor frame should also be externally grounded.
4. Strength Considerations:
   - Rexnord® TableTop® & MatTop® Chains molded from anti-static material must be derated 40% from their acetal counterparts.
   - Pressure-Velocity (PV) Limits: PV Limit of Rexnord® TableTop® Chains molded from anti-static material must be derated 40% from acetal materials. PV Limits relate to the speed and tension exerted as the chain travels around the corners.
5. Depending on application requirements, the entire conveyor chain can be comprised of anti-static material or sections of antistatic material can be interspersed at various intervals.
6. AS friction factor should be used when interspersing AS links into any other material.

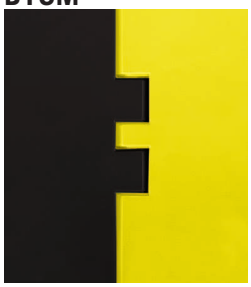
NR denotes "not recommended", Dash denotes "combination not tested"

**Friction of returnable bottles will vary depending on the quality of the glass, the amount of roughed up surface, etc.

Materials

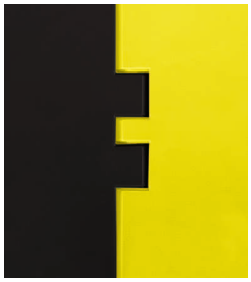
BRSM

BYSM



SRMB

SYMB



Brief Description

Automotive handling applications require chains to be assembled with different color end links to provide contrast. These are the same chain modules molded in wear and cut resistant materials (BSM, SMB, RSM and YSM) only assembled in the same chain. Can be used in both dry and wet conditions and in applications where abrasive wear due to products or environment is a concern. Has good impact resistance and is as strong as standard acetal materials.

Primary Components

Cut and abrasive wear resistant acetal (POM)

General Information

Prefix	Material	Temperature						FDA Approval
		Fahrenheit			Celsius			
		min	max		min	max		
			dry	wet		dry	wet	
BRSM	Black Cut Resistant with Red End Links	-40	+180	+150	-40	+82	+66	Yes
BYSM	Black Cut Resistant with Yellow End Links	-40	+180	+150	-40	+82	+66	Yes
SRMB	Blue Cut Resistant with Red End Links	-40	+180	+150	-40	+82	+66	Yes
SYMB	Blue Cut Resistant with Yellow End Links	-40	+180	+150	-40	+82	+66	Yes

Friction Factors Between Material and Product

Operating Condition	Product Material						
	Aluminum	Returnable Glass Bottles**	Non-Returnable Glass Bottles	Paper	Plastic (crates, shrink wrap, etc)	PET	Steel
Dry	0.25	0.27	0.20	0.33	0.25	0.25	0.30
Water	NR	NR	NR	NR	NR	NR	NR
Soap and Water	NR	NR	NR	NR	NR	NR	NR
Oil	---	---	---	NR	---	---	0.10

Friction Factors Between Material and Wearstrips

Operating Condition	Wearstrip Material		
	Carbon and Stainless Steel	UHMWPE	Nylatron®
Dry	0.30	0.25	0.25
Water	0.23	0.21	0.21
Soap and Water	0.15	0.15	0.15
Oil	0.10	0.10	0.10

Regulatory Information

The Food and Drug Administration (FDA) accepts certain materials for direct food contact. FDA approved material is compliant to FDA 21 CFR § 177.

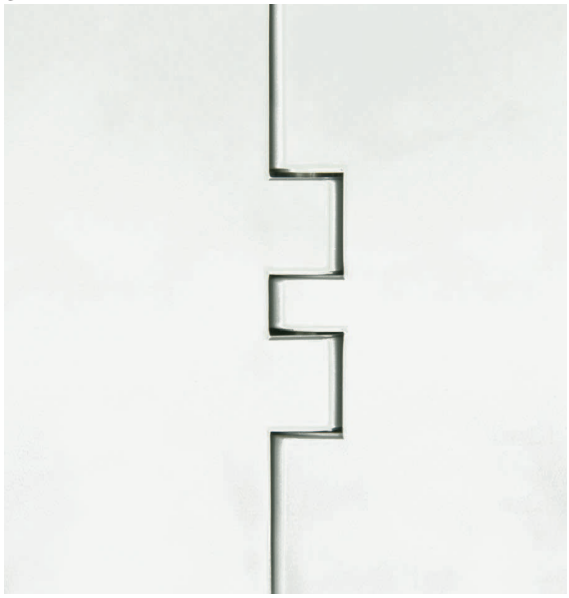
Nylatron is a registered trademark of Quadrant Engineering Plastics Products.

1. Not available for Rexnord® TableTop® and Multiflex chains.

NR denotes "not recommended", Dash denotes "combination not tested"

**Friction of returnable bottles will vary depending on the quality of the glass, the amount of roughed up surface, etc.

CR



Brief Description

Able to withstand nearly any harsh chemical environment, including applications where strong oxidizing agents, acids and bases such as sodium hydroxide, sulfuric acid, hydrochloric acid, hydrofluoric acid and iodine are present. Please contact Rexnord at (262) 376-4800 for specific uses for this material.

Primary Components

Fluorinated polymer

General Information

Prefix	Material	Temperature						FDA Approval
		Fahrenheit			Celsius			
		min	max		min	max		
			dry	wet		dry	wet	
CR	Extreme Chemical Resistant (White)	+40	+240	+212	+4	+116	+100	Yes

Friction Factors Between Material and Product

Operating Condition	Product Material						
	Aluminum	Returnable Glass Bottles**	Non-Returnable Glass Bottles	Paper	Plastic (crates, shrink wrap, etc)	PET	Steel
Dry	0.25	0.27	0.20	0.33	0.25	0.25	0.30
Water	0.17	0.18	0.15	NR	0.20	0.20	0.22
Soap and Water	0.12	0.14	0.10	NR	0.15	0.15	0.15
Oil	---	---	---	NR	---	---	0.10

Friction Factors Between Material and Wearstrips

Operating Condition	Wearstrip Material		
	Carbon and Stainless Steel	UHMWPE	Nylatron®
Dry	0.30	0.25	0.25
Water	0.23	0.21	0.21
Soap and Water	0.15	0.15	0.15
Oil	0.10	0.10	0.10

Regulatory Information

The Food and Drug Administration (FDA) accepts certain materials for direct food contact. FDA approved material is compliant to FDA 21 CFR § 177.

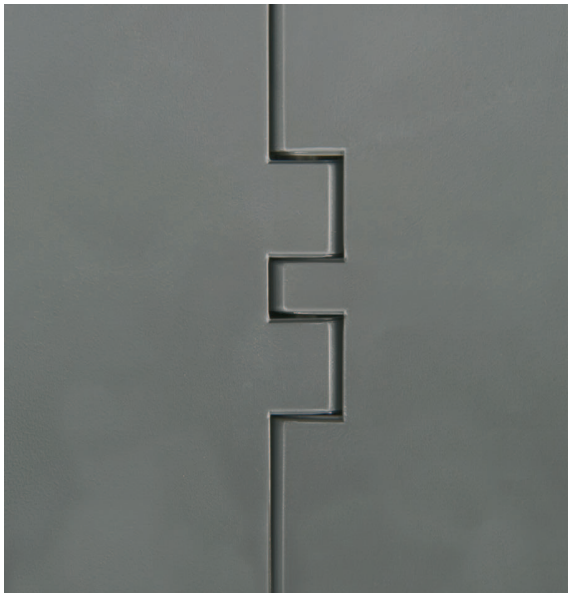
1. Strength Considerations:
   - Rexnord® TableTop® Chains molded from extreme chemical resistant material (with stainless steel pins) must be derated 20% from their acetal counterparts (with stainless steel pins).
   - Rexnord® TableTop® Chains molded from extreme chemical resistant material (with plastic pins) must be derated 40% from their acetal counterparts (with stainless steel pins).
   - Rexnord® MatTop® Chains molded from extreme chemical resistant material must be derated 20% from their acetal counterparts.
   - Pressure-Velocity (PV) Limits: PV Limit of Rexnord® TableTop® Chains molded from extreme chemical resistant material must be derated 20% from acetal materials. PV Limits relate to the speed and tension exerted as the chain travels around the corners.

NR denotes "not recommended", Dash denotes "combination not tested"

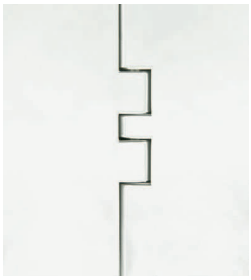
**Friction of returnable bottles will vary depending on the quality of the glass, the amount of roughed up surface, etc.

Materials

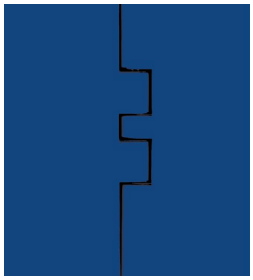
D



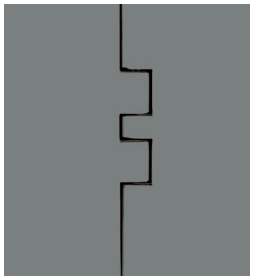
WD



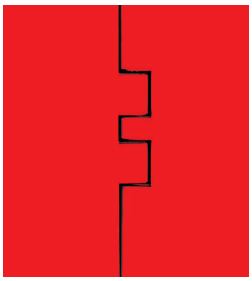
DBM



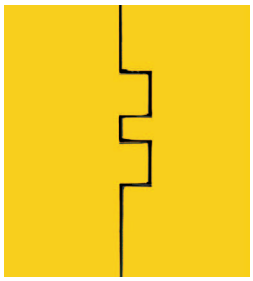
GM



RM



YM



Brief Description

A general-purpose conveyor chain material which has low friction, high strength, excellent wear life, superior fatigue resistance and is chemical resistant in a wide range of environments.

Primary Components

Acetal (POM)

General Information

Prefix	Material	Temperature						FDA Approval
		Fahrenheit			Celsius			
		min	max		min	max		
			dry	wet		dry	wet	
D	Plain Acetal (Gray)	-40	+180	+150	-40	+82	+66	No
WD	White Plain Acetal	-40	+180	+150	-40	+82	+66	No
DBM	Dark Blue Material	-40	+180	+150	-40	+82	+66	No
GM	Gray Material	-40	+180	+150	-40	+82	+66	No
RM	Red Material	-40	+180	+150	-40	+82	+66	No
YM	Yellow Material	-40	+180	+150	-40	+82	+66	No

Friction Factors Between Material and Product

Operating Condition	Product Material						
	Aluminum	Returnable Glass Bottles**	Non-Returnable Glass Bottles	Paper	Plastic (crates, shrink wrap, etc)	PET	Steel
Dry	0.25	0.27	0.20	0.33	0.25	0.25	0.30
Water	0.17	0.20	0.15	NR	0.20	0.20	0.22
Soap and Water	0.12	0.14	0.10	NR	0.15	0.15	0.15
Oil	---	---	---	NR	---	---	0.10

Friction Factors Between Material and Wearstrips

Operating Condition	Wearstrip Material		
	Carbon and Stainless Steel	UHMWPE	Nylatron®
Dry	0.30	0.25	0.25
Water	0.23	0.21	0.21
Soap and Water	0.15	0.15	0.15
Oil	0.10	0.10	0.10

Regulatory Information

The Food and Drug Administration (FDA) accepts certain materials for direct food contact. FDA approved material is compliant to FDA 21 CFR § 177.

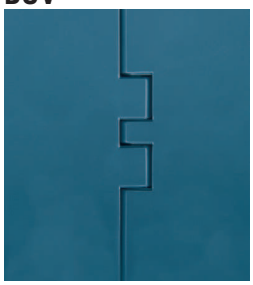
NR denotes "not recommended", Dash denotes "combination not tested"

**Friction of returnable bottles will vary depending on the quality of the glass, the amount of roughed up surface, etc.

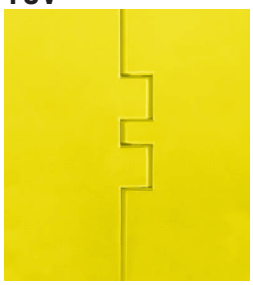
Materials

DUV

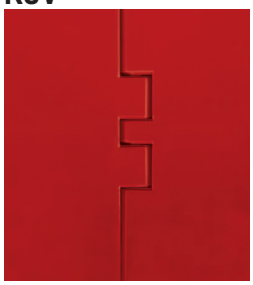
BUV



YUV



RUV



Brief Description

Formulated to reduce or eliminate material degradation in applications where ultraviolet radiation exposure is a concern. Retains its mechanical integrity when exposed to direct sunlight (outdoor applications) as well as in applications that use ultraviolet radiation to run a process. Has the same strength and wear properties as plain acetal material.

Primary Components

Ultraviolet resistant acetal (POM)

General Information

Prefix	Material	Temperature						FDA Approval
		Fahrenheit			Celsius			
		min	max		min	max		
			dry	wet		dry	wet	
DUV	Acetal Ultraviolet Resistant (Black)	0	+180	+150	-18	+82	+66	No
BUV	Blue Acetal Ultraviolet Resistant	0	+180	+150	-18	+82	+66	No
RUV	Red Acetal Ultraviolet Resistant	0	+180	+150	-18	+82	+66	No
YUV	Yellow Acetal Ultraviolet Resistant	0	+180	+150	-18	+82	+66	No

Friction Factors Between Material and Product

Operating Condition	Product Material						
	Aluminum	Returnable Glass Bottles**	Non-Returnable Glass Bottles	Paper	Plastic (crates, shrink wrap, etc)	PET	Steel
Dry	0.25	0.27	0.20	0.33	0.25	0.25	0.30
Water	0.17	0.18	0.15	NR	0.20	0.20	0.22
Soap and Water	0.12	0.14	0.10	NR	0.15	0.15	0.15
Oil	---	---	---	NR	---	---	0.10

Friction Factors Between Material and Wearstrips

Operating Condition	Wearstrip Material		
	Carbon and Stainless Steel	UHMWPE	Nylatron®
Dry	0.30	0.25	0.25
Water	0.23	0.21	0.21
Soap and Water	0.15	0.15	0.15
Oil	0.10	0.10	0.10

Regulatory Information

NR denotes "not recommended", Dash denotes "combination not tested"

**Friction of returnable bottles will vary depending on the quality of the glass, the amount of roughed up surface, etc.

Materials

EPDM (Black)

EPDM (White)

Brief Description

EPDM is used as a gripper material that has outstanding resistance to oxygen and ozone. It also has good resistance to the very hot water used in many SideGrip™ rinser applications. It is available in several different durometers (or hardness) for different applications.

Primary Components

Ethylene Propylene Rubber

General Information

Prefix	Material	Temperature						FDA Approval
		Fahrenheit			Celsius			
		min	max		min	max		
			dry	wet		dry	wet	
-	EPDM	-58	+302	+302	-50	+150	+150	No

Friction Factors Between Material and Product

Operating Condition	Product Material						
	Aluminum	Returnable Glass Bottles**	Non-Returnable Glass Bottles	Paper	Plastic (crates, shrink wrap, etc)	PET	Steel
Dry	NR	NR	NR	NR	NR	NR	NR
Water	NR	NR	NR	NR	NR	NR	NR
Soap and Water	NR	NR	NR	NR	NR	NR	NR
Oil	NR	NR	NR	NR	NR	NR	NR

Friction Factors Between Material and Wearstrips

Operating Condition	Wearstrip Material		
	Carbon and Stainless Steel	UHMWPE	Nylatron®
Dry	NR	NR	NR
Water	NR	NR	NR
Soap and Water	NR	NR	NR
Oil	NR	NR	NR

1. 1. This material is not available in TableTop®, MatTop®, or Multiflex chains. It is only available as a gripper material for SideGrip™ chains.
2. The temperature range for standard 50 shore EPDM grippers. Other hardnesses will affect the operating temperature.
3. Color may be black or white depending on chain series. See specific chain series in
4. Product Catalog for color.

Regulatory Information

NR denotes "not recommended", Dash denotes "combination not tested"

**Friction of returnable bottles will vary depending on the quality of the glass, the amount of roughed up surface, etc.

FR

Brief Description

Formulated to eliminate the possibility of sustained combustion should the chain be accidentally ignited. Will self extinguish per the UL Standard 94 V-O standard when the source of ignition or flame is removed.

Primary Components

Flame retardant polyester (PBT)

General Information

Prefix	Material	Temperature						FDA Approval
		Fahrenheit			Celsius			
		min	max		min	max		
			dry	wet		dry	wet	
FR	Flame Retardant (Gray)	0	+180	+140	-18	+82	+60	No

Friction Factors Between Material and Product

Operating Condition	Product Material						
	Aluminum	Returnable Glass Bottles**	Non-Returnable Glass Bottles	Paper	Plastic (crates, shrink wrap, etc)	PET	Steel
Dry	0.25	0.27	0.20	0.33	0.25	0.25	0.30
Water	0.17	0.18	0.15	NR	0.20	0.20	0.22
Soap and Water	0.12	0.14	0.10	NR	0.15	0.15	0.15
Oil	---	---	---	NR	---	---	0.10

Friction Factors Between Material and Wearstrips

Operating Condition	Wearstrip Material		
	Carbon and Stainless Steel	UHMWPE	Nylatron®
Dry	0.30	0.25	0.25
Water	0.23	0.21	0.21
Soap and Water	0.15	0.15	0.15
Oil	0.10	0.10	0.10

Regulatory Information

Rexnord, TableTop and MatTop is a trademark of Rexnord Corporation.

Nylatron is a registered trademark of Quadrant Engineering Plastics Products.

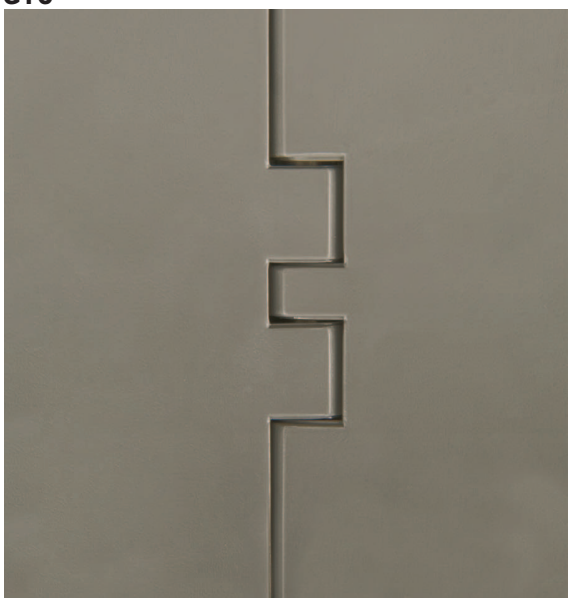
1. Strength Considerations:
   - Rexnord® TableTop® Chains molded from flame retardant material must be derated 40% from their acetal counterparts.
   - Rexnord® MatTop® Chains molded from flame retardant material must be derated 15% from their acetal counterparts.
   - Pressure-Velocity (PV) Limits: PV Limit of Rexnord® TableTop® Chains molded from flame retardant material must be derated 20% from acetal materials. PV Limits relate to the speed and tension exerted as the chain travels around the corners.
2. Flame retardant material is not recommended for high temperature applications.

NR denotes "not recommended", Dash denotes "combination not tested"

**Friction of returnable bottles will vary depending on the quality of the glass, the amount of roughed up surface, etc.

Materials

GTC



Brief Description

GTC is a high strength, toughened composite material specifically formulated to take constant impact. It's combination of high strength and low stretch make it an excellent material for high speed case incline (or decline) conveyors. Has excellent impact resistance as well as good chemical resistance.

Primary Components

High strength, impact modified composite

General Information

Prefix	Material	Temperature						FDA Approval
		Fahrenheit			Celsius			
		min	max		min	max		
			dry	wet		dry	wet	
GTC	Grey Tough Composite	0	+180	+140	-18	+82	+60	No

Friction Factors Between Material and Product

Operating Condition	Product Material						
	Aluminum	Returnable Glass Bottles**	Non-Returnable Glass Bottles	Paper	Plastic (crates, shrink wrap, etc)	PET	Steel
Dry	0.25	0.27	0.20	0.33	0.25	0.25	0.30
Water	0.17	0.18	0.15	NR	0.21	0.21	0.23
Soap and Water	0.12	0.14	0.10	NR	0.15	0.15	0.15
Oil	---	---	---	NR	0.10	0.10	0.10

Friction Factors Between Material and Wearstrips

Operating Condition	Wearstrip Material		
	Carbon and Stainless Steel	UHMWPE	Nylatron®
Dry	0.30	0.25	0.25
Water	0.23	0.21	0.21
Soap and Water	0.15	0.15	0.15
Oil	0.10	0.10	0.10

Regulatory Information

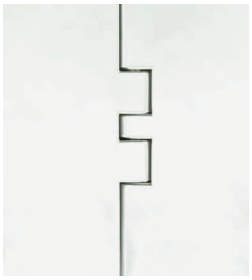
The Food and Drug Administration (FDA) accepts certain materials for direct food contact. FDA approved material is compliant to FDA 21 CFR § 177.

NR denotes "not recommended", Dash denotes "combination not tested"

**Friction of returnable bottles will vary depending on the quality of the glass, the amount of roughed up surface, etc.

HP™

WHP



Brief Description

Patented Rexnord® High Performance Material has the lowest coefficient of friction of any chain or belt material. Extensive testing has proven that new high performance materials can reduce wear up to 40% over plain acetal and 25% over low friction acetal. Ideal for dry running applications and will permit greater operating speeds for aggressive applications in the beverage and container industry. Used to lower product backline pressure and to minimize conveyor pulsation resulting in reduced chain flight wear and reduced chain elongation.

Primary Components

High performance, internally lubricated acetal (POM)

General Information

Prefix	Material	Temperature						FDA Approval
		Fahrenheit			Celsius			
		min	max		min	max		
			dry	wet		dry	wet	
HP™	High Performance (Brown)	-40	+180	+150	-40	+82	+66	Yes
WHP	White High Performance	-40	+180	+150	-40	+82	+66	Yes

Friction Factors Between Material and Product

Operating Condition	Product Material						
	Aluminum	Returnable Glass Bottles**	Non-Returnable Glass Bottles	Paper	Plastic (crates, shrink wrap, etc)	PET	Steel
Dry	0.18	0.20	0.12	0.23	0.18	0.18	0.18
Water	0.14	0.18	0.11	NR	0.16	0.16	0.16
Soap and Water	0.12	0.14	0.10	NR	0.14	0.14	0.13
Oil	---	---	---	NR	---	---	0.10

Friction Factors Between Material and Wearstrips

Operating Condition	Wearstrip Material		
	Carbon and Stainless Steel	UHMWPE	Nylatron®
Dry	0.18	0.18	0.18
Water	0.16	0.16	0.16
Soap and Water	0.13	0.14	0.14
Oil	0.10	0.10	0.10

Regulatory Information

The Food and Drug Administration (FDA) accepts certain materials for direct food contact. FDA approved material is compliant to FDA 21 CFR § 177.

Nylatron is a registered trademark of Quadrant Engineering Plastics Products.

U.S. Patent: 4436200

NR denotes "not recommended", Dash denotes "combination not tested"

**Friction of returnable bottles will vary depending on the quality of the glass, the amount of roughed up surface, etc.

Materials

HP RubberTop® / SuperGrip™

Brief Description

HPM is specifically formulated for general high friction applications. The high performance HP™ base links in conjunction with molded high friction pads make it ideal for high speed incline or decline conveyors.

Primary Components

High performance HP™ with molded high friction pads

General Information

Prefix	Material	Temperature						FDA Approval
		Fahrenheit			Celsius			
		min	max		min	max		
			dry	wet		dry	wet	
HP	High Performance Friction Top	-40	+180	+150	-40	+82	+66	No

Friction Factors Between Material and Product

Operating Condition	Product Material						
	Aluminum	Returnable Glass Bottles	Non-Returnable Glass Bottles	Paper	Plastic (crates, shrink wrap, etc)	PET	Steel
Dry	NR	NR	NR	NR	NR	NR	NR
Water	NR	NR	NR	NR	NR	NR	NR
Soap and Water	NR	NR	NR	NR	NR	NR	NR
Oil	NR	NR	NR	0.87***	0.85***	NR	NR

Friction Factors Between Material and Wearstrips

Operating Condition	Wearstrip Material		
	Carbon and Stainless Steel	UHMWPE	Nylatron®
Dry	0.18	0.18	0.18
Water	0.16	0.16	0.16
Soap and Water	0.13	0.14	0.14
Oil	0.10	0.10	0.10

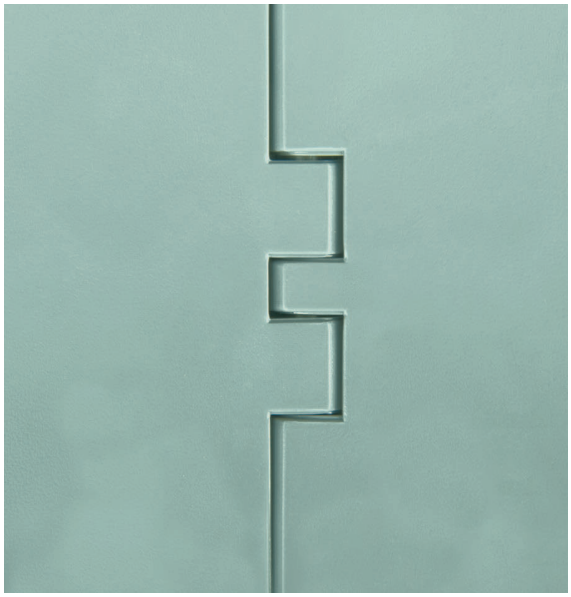
Regulatory Information

***It is not recommended to accumulate on RubberTop® products; however, these values can be utilized when determining brake belt or "hold back" calculations.

NR denotes "not recommended", Dash denotes "combination not tested"

**Friction of returnable bottles will vary depending on the quality of the glass, the amount of roughed up surface, etc.

HS



Brief Description

Formulated to retain strength and resist degradation and swelling in hot, wet environments. Can be used in demanding high temperature applications such as bottle rinsers, sterilizers, warmers and pasteurizers.

Primary Components

Heat stabilized nylon (PA)

General Information

Prefix	Material	Temperature						FDA Approval
		Fahrenheit			Celsius			
		min	max		min	max		
			dry	wet		dry	wet	
HS	Heat Stabilized (Green)	-40	+220	+212	-40	+104	+100	No

Friction Factors Between Material and Product

Operating Condition	Product Material						
	Aluminum	Returnable Glass Bottles**	Non-Returnable Glass Bottles	Paper	Plastic (crates, shrink wrap, etc)	PET	Steel
Dry	0.25	0.27	0.20	0.33	0.25	0.25	0.30
Water	0.17	0.18	0.15	NR	0.20	0.20	0.22
Soap and Water	0.12	0.14	0.10	NR	0.15	0.15	0.15
Oil	---	---	---	NR	---	---	0.10

Friction Factors Between Material and Wearstrips

Operating Condition	Wearstrip Material		
	Carbon and Stainless Steel	UHMWPE	Nylatron®
Dry	0.30	0.28	0.28
Water	0.25	0.23	0.23
Soap and Water	0.18	0.18	0.18
Oil	0.10	0.10	0.10

Regulatory Information

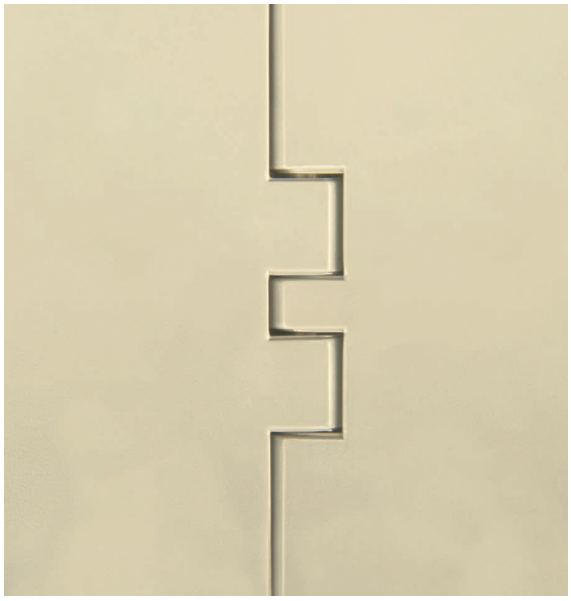
1. Strength Considerations:
   - Pressure-Velocity (PV) Limits: PV Limit of Rexnord® TableTop® Chains molded from heat stabilized material must be derated 20% from acetal materials. PV Limits relate to the speed and tension exerted as the chain travels around the corners.
2. Heat stabilized material, unlike other nylon materials, can be used in wet environments without the risk of swelling.

NR denotes "not recommended", Dash denotes "combination not tested"

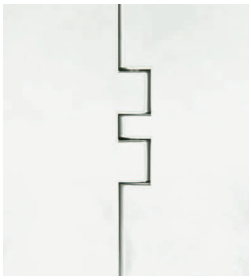
**Friction of returnable bottles will vary depending on the quality of the glass, the amount of roughed up surface, etc.

Materials

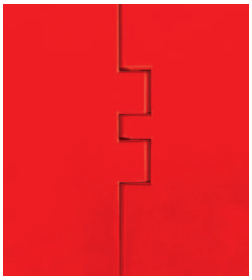
HT



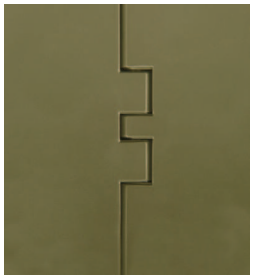
WHT



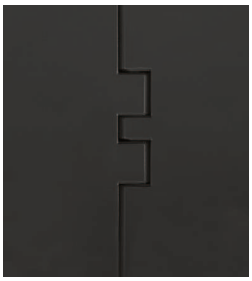
RHT



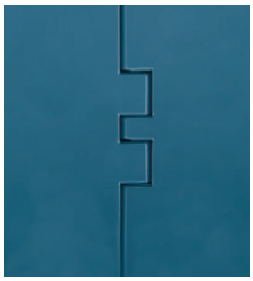
KHT



HTB



BHT



Brief Description

Formulated to be used in both high temperature and general applications in both dry and wet conditions. A good general purpose conveyor chain material and in addition has excellent resistance to chemicals including salts, alcohol, bases and many acids.

Primary Components

Polypropylene (PP)

General Information

Prefix	Material	Temperature						FDA Approval
		Fahrenheit			Celsius			
		min	max dry	max wet	min	max dry	max wet	
HT	High Temperature (Beige)	+40	+220	+212	+4	+104	+100	Yes
WHT	White High Temperature	+40	+220	+212	+4	+104	+100	Yes
RHT	Red High Temperature	+40	+220	+212	+4	+104	+100	Yes
KHT	Khaki High Temperature	+40	+220	+212	+4	+104	+100	Yes
BHT	Blue High Temperature	+40	+220	+212	+4	+104	+100	Yes
HTB	Black High Temperature	+40	+220	+212	+4	+104	+100	Yes

Friction Factors Between Material and Product

Operating Condition	Product Material						
	Aluminum	Returnable Glass Bottles**	Non-Returnable Glass Bottles	Paper	Plastic (crates, shrink wrap, etc)	PET	Steel
Dry	0.29	0.29	0.24	0.35	0.32	0.28	0.31
Water	0.19	0.21	0.18	NR	0.24	0.20	0.25
Soap and Water	0.15	0.14	0.10	NR	0.19	0.15	0.17
Oil	---	---	---	NR	---	---	0.10

Friction Factors Between Material and Wearstrips

Operating Condition	Wearstrip Material		
	Carbon and Stainless Steel	UHMWPE	Nylatron®
Dry	0.35	0.30	0.30
Water	0.30	0.25	0.25
Soap and Water	0.25	0.20	0.20
Oil	0.10	0.10	0.10

1. Buoyant in water.
2. Not available for Rexnord® TableTop® and Multiflex chains.

Regulatory Information

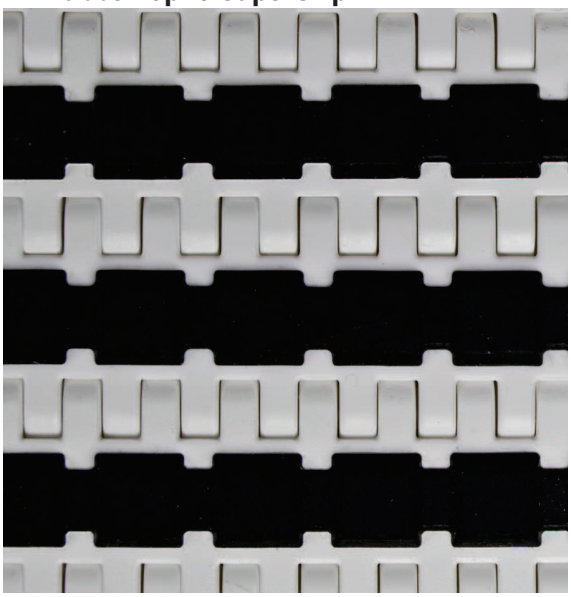
The Food and Drug Administration (FDA) accepts certain materials for direct food contact. FDA approved material is compliant to FDA 21 CFR § 177.

NR denotes "not recommended", Dash denotes "combination not tested"

**Friction of returnable bottles will vary depending on the quality of the glass, the amount of roughed up surface, etc.

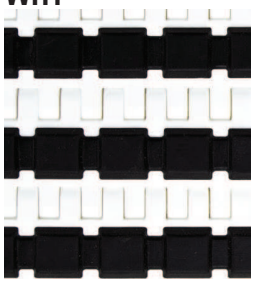
Materials

HT RubberTop® / SuperGrip™



KHT

WHT



Brief Description

HT is specifically formulated for general high friction applications. The polypropylene base links in conjunction with high friction surface make it ideal for incline or decline conveyors

Primary Components

High temperature polypropylene with high friction pads

General Information

Prefix	Material	Temperature						FDA Approval
		Fahrenheit			Celsius			
		min	max		min	max		
			dry	wet		dry	wet	
HT	High Temperature	+40	+180	+140	+4	+82	+60	Yes
KHT	Khaki High Temperature	+40	+180	+140	+4	+82	+60	Yes
WHT	White High Temperature	+40	+180	+140	+4	+82	+60	Yes

Friction Factors Between Material and Product

Operating Condition	Product Material						
	Aluminum	Returnable Glass Bottles	Non-Returnable Glass Bottles	Paper	Plastic (crates, shrink wrap, etc)	PET	Steel
Dry	NR	NR	NR	NR	NR	NR	NR
Water	NR	NR	NR	NR	NR	NR	NR
Soap and Water	NR	NR	NR	NR	NR	NR	NR
Oil	NR	NR	NR	0.87***	0.85***	NR	NR

Friction Factors Between Material and Wearstrips

Operating Condition	Wearstrip Material		
	Carbon and Stainless Steel	UHMWPE	Nylatron®
Dry	0.35	0.30	0.30
Water	0.30	0.25	0.25
Soap and Water	0.25	0.20	0.20
Oil	0.10	0.10	0.10

1. Buoyant in water
2. Not available for Rexnord® TableTop® and Multiflex chains

Regulatory Information

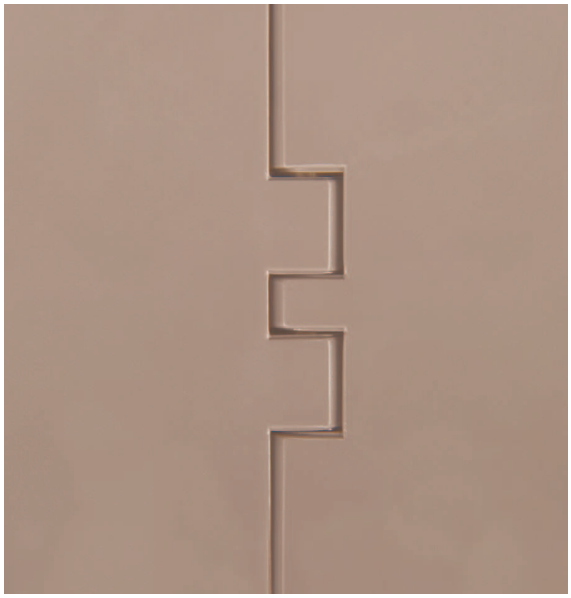
***It is not recommended to accumulate on RubberTop® products; however, these values can be utilized when determining brake belt or "hold back" calculations.

NR denotes "not recommended", Dash denotes "combination not tested"

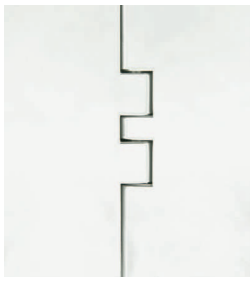
**Friction of returnable bottles will vary depending on the quality of the glass, the amount of roughed up surface, etc.

Materials

LF



WLF



Brief Description

An excellent conveyor chain material with a low coefficient of friction between a variety of materials. Extensive testing has proven that low friction materials can reduce wear up to 15% over plain acetal. Ideal for dry running applications and will permit greater operating speeds. Used to lower product backline pressure and minimize conveyor pulsation resulting in reduced chain flight wear and reduced chain elongation.

Primary Components

Patented blend of low friction acetal (POM) and lubricants

General Information

Prefix	Material	Temperature						FDA Approval
		Fahrenheit			Celsius			
		min	max		min	max		
			dry	wet		dry	wet	
LF	Low Friction (Tan)	-40	+180	+150	-40	+82	+66	Yes
WLF	White Low Friction	-40	+180	+150	-40	+82	+66	Yes

Friction Factors Between Material and Product

Operating Condition	Product Material						
	Aluminum	Returnable Glass Bottles**	Non-Returnable Glass Bottles	Paper	Plastic (crates, shrink wrap, etc)	PET	Steel
Dry	0.20	0.20	0.15	0.30	0.20	0.20	0.25
Water	0.15	0.18	0.13	NR	0.18	0.18	0.20
Soap and Water	0.12	0.14	0.10	NR	0.15	0.15	0.15
Oil	---	---	---	NR	---	---	0.10

Friction Factors Between Material and Wearstrips

Operating Condition	Wearstrip Material		
	Carbon and Stainless Steel	UHMWPE	Nylatron®
Dry	0.25	0.20	0.20
Water	0.20	0.18	0.18
Soap and Water	0.15	0.15	0.15
Oil	0.10	0.10	0.10

Regulatory Information

The Food and Drug Administration (FDA) accepts certain materials for direct food contact. FDA approved material is compliant to FDA 21 CFR § 177.

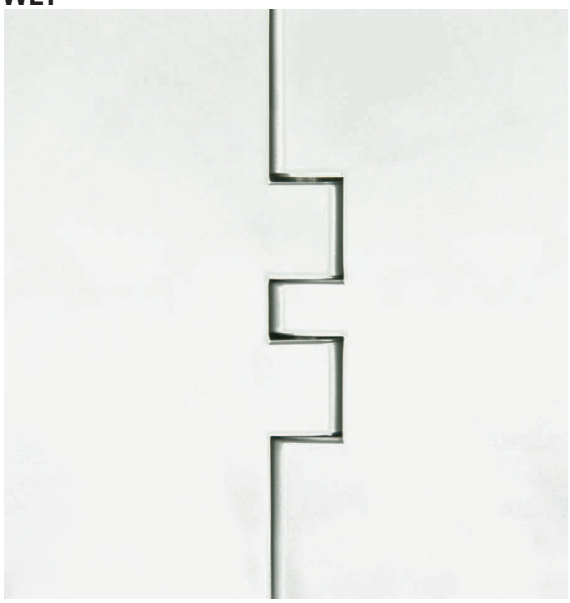
U.S. Patent: 4436200

NR denotes "not recommended", Dash denotes "combination not tested"

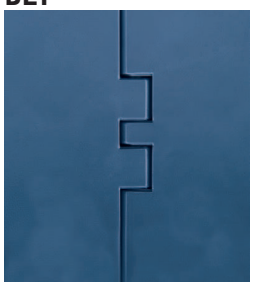
**Friction of returnable bottles will vary depending on the quality of the glass, the amount of roughed up surface, etc.

Materials

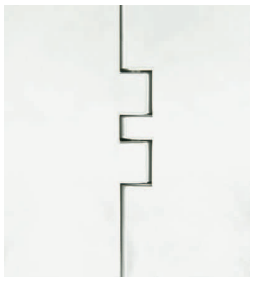
WLT



BLT



LT



Brief Description

Formulated to retain toughness, impact strength and ductility in both dry and wet conditions. Retains its properties in temperatures as low as -100 °F (-73 °C). Has excellent impact resistance, and because of its inherent ductility, is excellent in applications where other materials may chip or fracture. Is also chemical resistant to most bleaches, bases, acids and hydrocarbons.

Primary Components

Polyethylene (HDPE)

General Information

Prefix	Material	Temperature						FDA Approval
		Fahrenheit			Celsius			
		min	max		min	max		
			dry	wet		dry	wet	
WLT	White Low Temperature	-100	+80	+80	-73	+27	+27	Yes
BLT	Blue Low Temperature	-100	+80	+80	-73	+27	+27	Yes
LT	Low Temperature (natural)	-100	+80	+80	-73	+27	+27	Yes

Friction Factors Between Material and Product

Operating Condition	Product Material						
	Aluminum	Returnable Glass Bottles**	Non-Returnable Glass Bottles	Paper	Plastic (crates, shrink wrap, etc)	PET	Steel
Dry	0.22	0.24	0.18	0.30	0.22	0.22	0.28
Water	0.17	0.17	0.14	NR	0.18	0.18	0.22
Soap and Water	0.12	0.14	0.10	NR	0.15	0.15	0.15
Oil	---	---	---	NR	---	---	0.10

Friction Factors Between Material and Wearstrips

Operating Condition	Wearstrip Material		
	Carbon and Stainless Steel	UHMWPE	Nylatron®
Dry	0.28	0.23	0.23
Water	0.22	0.20	0.20
Soap and Water	0.15	0.15	0.15
Oil	0.10	0.10	0.10

1. Buoyant in water.
2. Not available for Rexnord® TableTop® and Multiflex chains.

Regulatory Information

The Food and Drug Administration (FDA) accepts certain materials for direct food contact. FDA approved material is compliant to FDA 21 CFR § 177.

NR denotes "not recommended", Dash denotes "combination not tested"

**Friction of returnable bottles will vary depending on the quality of the glass, the amount of roughed up surface, etc.

Materials

MR

Brief Description

Formulated to be used in applications where conveying hot products may cause chain top surface to melt. Can resist contact temperatures up to 375 °F (190 °C). Used to convey high temperature products such as hot cans and hot pans in container manufacturing and industrial part processing applications

Primary Components

Melt resistant nylon (PA)

General Information

Prefix	Material	Temperature						FDA Approval
		Fahrenheit			Celsius			
		min	max		min	max		
			dry	wet		dry	wet	
MR	Melt Resistant (Black)	-80	+220	NR	-62	+104	NR	No

Friction Factors Between Material and Product

Operating Condition	Product Material						
	Aluminum	Returnable Glass Bottles**	Non-Returnable Glass Bottles	Paper	Plastic (crates, shrink wrap, etc)	PET	Steel
Dry	0.25	0.27	0.20	0.33	0.25	0.25	0.30
Water	NR	NR	NR	NR	NR	NR	NR
Soap and Water	NR	NR	NR	NR	NR	NR	NR
Oil	---	---	---	NR	---	---	0.10

Friction Factors Between Material and Wearstrips

Operating Condition	Wearstrip Material		
	Carbon and Stainless Steel	UHMWPE	Nylatron®
Dry	0.30	0.28	0.28
Water	NR	NR	NR
Soap and Water	NR	NR	NR
Oil	0.10	0.10	0.10

Regulatory Information

1. Strength Considerations:
   - Pressure-Velocity (PV) Limits: PV Limit of Rexnord® TableTop® Chains molded from melt resistant material must be derated 20% from acetal materials. PV Limits relate to the speed and tension exerted as the chain travels around the corners.
2. It is important to lubricate side-flexing chains in the corners to reduce noise levels at speeds in excess of 100 FPM; water lubrication is unacceptable because it will cause melt resistant material to swell and lose strength.

NR denotes "not recommended", Dash denotes "combination not tested"

**Friction of returnable bottles will vary depending on the quality of the glass, the amount of roughed up surface, etc.

Materials

Neoprene (Black)

Neoprene (White)

Brief Description

Neoprene is used as a gripper material that has good resistance to gasoline, sunlight, ozone & oxidation. It is available in several different durometers (or hardness) for different applications.

Primary Components

Neoprene

General Information

Prefix	Material	Temperature						FDA Approval
		Fahrenheit			Celsius			
		min	max		min	max		
			dry	wet		dry	wet	
-	Neoprene	-40	+212	+200	-40	+100	+93	No

Friction Factors Between Material and Product

Operating Condition	Product Material						
	Aluminum	Returnable Glass Bottles	Non-Returnable Glass Bottles	Paper	Plastic (crates, shrink wrap, etc)	PET	Steel
Dry	NR	NR	NR	NR	NR	NR	NR
Water	NR	NR	NR	NR	NR	NR	NR
Soap and Water	NR	NR	NR	NR	NR	NR	NR
Oil	NR	NR	NR	NR	NR	NR	NR

Friction Factors Between Material and Wearstrips

Operating Condition	Wearstrip Material		
	Carbon and Stainless Steel	UHMWPE	Nylatron®
Dry	NR	NR	NR
Water	NR	NR	NR
Soap and Water	NR	NR	NR
Oil	NR	NR	NR

1. This material is not available in TableTop®, MatTop®, or Multiflex chains. It is only available as a gripper material for SideGrip™ chains.
2. The temperature range for standard 40 shore Neoprene grippers. Other hardnesses will affect the operating temperature.
3. Color may be black or white depending on chain series. See specific chain series in Product Catalog for color.

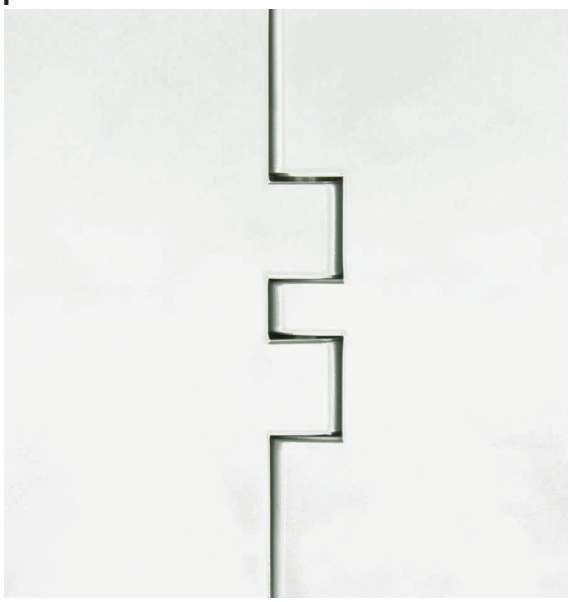
Regulatory Information

NR denotes "not recommended", Dash denotes "combination not tested"

**Friction of returnable bottles will vary depending on the quality of the glass, the amount of roughed up surface, etc.

Materials

P



Brief Description

Formulated to reduce or eliminate material degradation in applications where chemicals such as chlorine and phosphorous are present at moderate concentrations

Primary Components

Polyester (PBT)

General Information

Prefix	Material	Temperature						FDA Approval
		Fahrenheit			Celsius			
		min	max		min	max		
			dry	wet		dry	wet	
P	Chemical Resistant (White)	0	+180	+140	-18	+82	+60	Yes

Friction Factors Between Material and Product

Operating Condition	Product Material						
	Aluminum	Returnable Glass Bottles**	Non-Returnable Glass Bottles	Paper	Plastic (crates, shrink wrap, etc)	PET	Steel
Dry	0.25	0.27	0.20	0.33	0.25	0.25	0.30
Water	0.17	0.18	0.15	NR	0.21	0.21	0.22
Soap and Water	0.12	0.14	0.10	NR	0.15	0.10	0.15
Oil	---	---	---	NR	---	---	0.10

Friction Factors Between Material and Wearstrips

Operating Condition	Wearstrip Material		
	Carbon and Stainless Steel	UHMWPE	Nylatron®
Dry	0.30	0.25	0.25
Water	0.23	0.21	0.21
Soap and Water	0.15	0.15	0.15
Oil	0.10	0.10	0.10

Regulatory Information

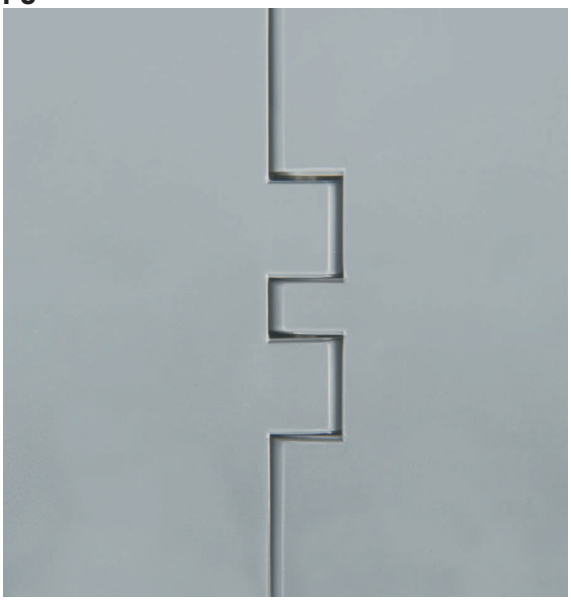
The Food and Drug Administration (FDA) accepts certain materials for direct food contact. FDA approved material is compliant to FDA 21 CFR § 177.

1. Strength Considerations:
   - Rexnord® TableTop® Chains molded from chemical resistant material (with stainless steel pins) must be derated 20% from their acetal counterparts (with stainless steel pins).
   - Rexnord® TableTop® Chains molded from chemical resistant material (with plastic pins) must be derated 40% from their acetal counterparts (with stainless steel pins).
   - Rexnord® MatTop® Chains molded from chemical resistant material must be derated 20% from their acetal counterparts.
   - Pressure-Velocity (PV) Limits: PV Limit of Rexnord® TableTop® Chains molded from chemical resistant material must be derated 20% from acetal materials. PV Limits relate to the speed and tension exerted as the chain travels around the corners.

NR denotes "not recommended", Dash denotes "combination not tested"

**Friction of returnable bottles will vary depending on the quality of the glass, the amount of roughed up surface, etc.

PS®



Brief Description

Platinum Series® PS® material is a specially formulated material especially suited for high speed conveying. PS® material can decrease high speed wear by as much as 5 times. Side-flexing PV limits are also increased which means that a side-flexing chain molded in PS® can be run 200% faster than the same chain in acetal, or 150% faster than the same chain in HP™! "Optimized for PET" means that PET bottles running on PS® chains exhibit the lowest friction available. Low coefficients of friction reduce product backline pressures and minimize pulsations.

Primary Components

High speed Platinum Series® internally lubricated acetal (POM)

General Information

Prefix	Material	Temperature						FDA Approval
		Fahrenheit			Celsius			
		min	max		min	max		
			dry	wet		dry	wet	
PS®	Platinum Series® (Silver)	-40	+180	+150	-40	+82	+66	Yes

Friction Factors Between Material and Product

Operating Condition	Product Material						
	Aluminum	Returnable Glass Bottles**	Non-Returnable Glass Bottles	Paper	Plastic (crates, shrink wrap, etc)	PET	Steel
Dry	0.18	0.20	0.12	0.23	0.18	0.16	0.18
Water	0.14	0.18	0.11	NR	0.16	0.15	0.16
Soap and Water	0.12	0.14	0.10	NR	0.14	0.14	0.13
Oil	---	---	---	NR	---	---	0.10

Friction Factors Between Material and Wearstrips

Operating Condition	Wearstrip Material		
	Carbon and Stainless Steel	UHMWPE	Nylatron®
Dry	0.18	0.18	0.18
Water	0.16	0.16	0.16
Soap and Water	0.13	0.14	0.14
Oil	0.10	0.10	0.10

Regulatory Information

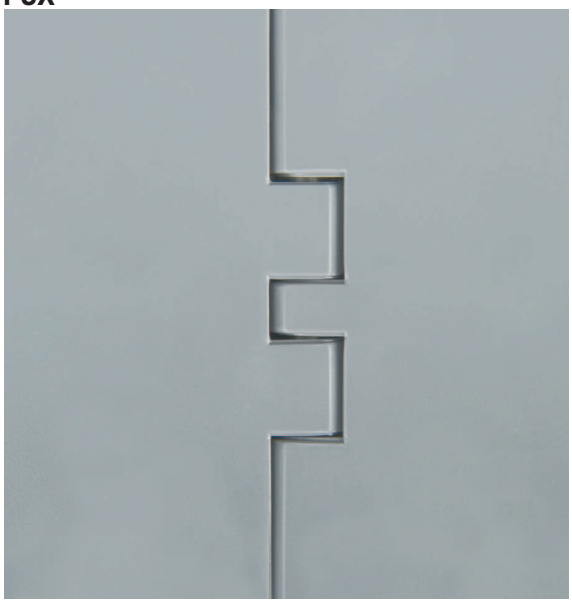
The Food and Drug Administration (FDA) accepts certain materials for direct food contact. FDA approved material is compliant to FDA 21 CFR § 177.

NR denotes "not recommended", Dash denotes "combination not tested"

**Friction of returnable bottles will vary depending on the quality of the glass, the amount of roughed up surface, etc.

Materials

PSX®



Brief Description

Platinum Series X® PSX® material is an advanced performance polymer alloy engineered specifically for run dry applications. PSX® material minimizes the amount of conveyor lubrication needed, and in many cases offers a completely run dry solution. PSX® material also minimizes the dusting phenomena in dry running conditions.

Primary Components

Advanced performance polymer alloy designed specifically for run dry applications

General Information

Prefix	Material	Temperature						FDA Approval
		Fahrenheit			Celsius			
		min	max		min	max		
			dry	wet		dry	wet	
PSX®	Platinum Series X® (Gray)	-40	+180	+150	-40	+82	+66	Yes

Friction Factors Between Material and Product

Operating Condition	Product Material						
	Aluminum	Returnable Glass Bottles**	Non-Returnable Glass Bottles	Paper	Plastic (crates, shrink wrap, etc)	PET	Steel
Dry	0.16	0.20	0.12	0.23	0.18	0.16	0.16
Water	0.13	0.18	0.11	NR	0.16	0.15	0.14
Soap and Water	0.12	0.14	0.10	NR	0.14	0.14	0.12
Oil	---	---	---	NR	---	---	0.10

Friction Factors Between Material and Wearstrips

Operating Condition	Wearstrip Material			
	Carbon and Stainless Steel	UHMWPE	Nylatron®	ULF™
Dry	0.18	0.18	0.16	0.12
Water	0.16	0.16	0.14	0.11
Soap and Water	0.13	0.14	0.12	0.10
Oil	0.10	0.10	0.10	0.10

Regulatory Information

The Food and Drug Administration (FDA) accepts certain materials for direct food contact. FDA approved material is compliant to FDA 21 CFR § 177.

NR denotes "not recommended", Dash denotes "combination not tested"

**Friction of returnable bottles will vary depending on the quality of the glass, the amount of roughed up surface, etc.

S

Brief Description

A strong, abrasion resistant, fine grained, hardened carbon steel with a smooth surface finish. Used in applications requiring high strength, impact resistance and hardened chain surface such as parts handling.

Primary Components

Carbon steel

General Information

Prefix	Material	Temperature						FDA Approval
		Fahrenheit			Celsius			
		min	max		min	max		
			dry	wet		dry	wet	
S	Carbon Steel	-40	+350	NR	-40	+177	NR	No

Friction Factors Between Material and Product

Operating Condition	Product Material						
	Aluminum	Returnable Glass Bottles**	Non-Returnable Glass Bottles	Paper	Plastic (crates, shrink wrap, etc)	PET	Steel
Dry	0.34	0.35	0.33	0.43	0.31	0.30	0.38
Water	NR	NR	NR	NR	NR	NR	NR
Soap and Water	NR	NR	NR	NR	NR	NR	NR
Oil	0.10	0.10	NR	NR	NR	NR	0.10

Friction Factors Between Material and Wearstrips

Operating Condition	Wearstrip Material		
	Carbon and Stainless Steel	UHMWPE	Nylatron®
Dry	0.40	0.30	0.30
Water	NR	NR	NR
Soap and Water	NR	NR	NR
Oil	0.10	0.10	0.10

1. 1. It is important to lubricate side-flexing chains in the corners to reduce noise levels; water lubrication is unacceptable due to the potential for corrosion and rusting. Melt resistant material to swell and lose strength.
2. Not available for Rexnord® MatTop® and Multiflex chains.

Regulatory Information

NR denotes "not recommended", Dash denotes "combination not tested"

**Friction of returnable bottles will vary depending on the quality of the glass, the amount of roughed up surface, etc.

Materials

SS

Brief Description

Has excellent corrosion and abrasion resistance. Possess resistance to acids, have non-magnetic qualities, good impact resistance, good surface hardness and smooth surface finish. Used in applications requiring corrosion and abrasion resistance, including glass containers and parts handling where water or lubricants are used. The chain life of Rexnord® TableTop® Chains made with austenitic stainless steel material have been demonstrated to have more than 2x the wear life than competitive chains made with ferritic stainless steel.

Primary Components

Austenitic stainless steel

General Information

Prefix	Material	Temperature						FDA Approval
		Fahrenheit			Celsius			
		min	max		min	max		
			dry	wet		dry	wet	
SS	Stainless Steel	-100	+800	+212	-73	+427	+100	Yes

Friction Factors Between Material and Product

Operating Condition	Product Material						
	Aluminum	Returnable Glass Bottles**	Non-Returnable Glass Bottles	Paper	Plastic (crates, shrink wrap, etc)	PET	Steel
Dry	0.34	0.35	0.33	0.43	0.31	0.30	0.38
Water	0.27	0.30	0.29	NR	0.22	0.21	0.30
Soap and Water	0.14	0.15	0.15	NR	0.15	0.14	0.15
Oil	---	---	---	NR	---	---	---

Friction Factors Between Material and Wearstrips

Operating Condition	Wearstrip Material		
	Carbon and Stainless Steel	UHMWPE	Nylatron®
Dry	0.40	0.30	0.30
Water	0.35	0.22	0.22
Soap and Water	0.15	0.15	0.15
Oil	0.15	0.10	0.10

1. It is important to lubricate side-flexing chains in the corners to reduce noise levels.
2. Not available for Rexnord® MatTop® and Multiflex chains.

Regulatory Information

Based on the material chemistries, industry standards, and the documentation in the Federal Registry, it is the opinion of Rexnord that the Rexnord® TableTop® stainless steel chains can be considered GRAS for direct food contact.

NR denotes "not recommended", Dash denotes "combination not tested"

**Friction of returnable bottles will vary depending on the quality of the glass, the amount of roughed up surface, etc.

SSB

Brief Description

A special austenitic stainless steel used in applications that require the chain to allow magnetic fields to pass through. In some applications, magnets are used to stabilize or hold products that are conveyed on the top of the chain. Allows magnets to interact with the product without increasing chain tension or drive requirements. Can also be used in mechanical applications were magnetism introduced into the system can cause component malfunction. Has excellent corrosion, abrasion and impact resistance. Also has good surface hardness and a smooth surface finish. Used in corrosive environments where strong acids or bases are present.

Primary Components

Low ferromagnetic austenitic stainless steel

General Information

Prefix	Material	Temperature						FDA Approval
		Fahrenheit			Celsius			
		min	max		min	max		
			dry	wet		dry	wet	
SSB	Stainless Steel	-100	+800	+212	-73	+427	+100	Yes

Friction Factors Between Material and Product

Operating Condition	Product Material						
	Aluminum	Returnable Glass Bottles**	Non-Returnable Glass Bottles	Paper	Plastic (crates, shrink wrap, etc)	PET	Steel
Dry	0.28	0.47	0.35	0.40	0.30	0.30	0.35
Water	0.19	0.31	0.25	NR	0.20	0.20	0.25
Soap and Water	0.12	0.21	0.15	NR	0.10	0.10	0.15
Oil	---	---	---	NR	---	---	0.15

Friction Factors Between Material and Wearstrips

Operating Condition	Wearstrip Material		
	Carbon and Stainless Steel	UHMWPE	Nylatron®
Dry	0.50	0.40	0.40
Water	0.40	0.30	0.30
Soap and Water	0.20	0.20	0.20
Oil	0.20	0.10	0.10

1. It is important to lubricate side-flexing chains in the corners to reduce noise levels.
2. Not available for Rexnord® MatTop® and Multiflex chains.

Regulatory Information

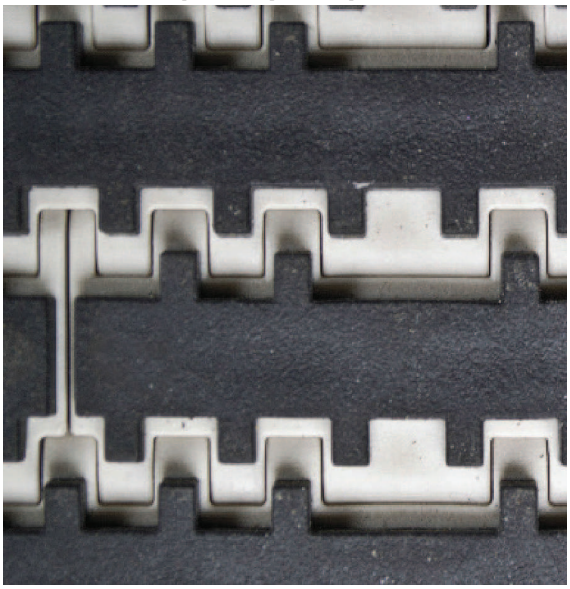
Based on the material chemistries, industry standards, and the documentation in the Federal Registry, it is the opinion of Rexnord that the Rexnord® TableTop® stainless steel chains can be considered GRAS for direct food contact.

NR denotes "not recommended", Dash denotes "combination not tested"

**Friction of returnable bottles will vary depending on the quality of the glass, the amount of roughed up surface, etc.

Materials

GTC RubberTop® / SuperGrip™



Brief Description

GTC is a high strength, toughened composite material specifically formulated to take constant impact. It's combination of high strength and low stretch along with high friction surface make it excellent for high speed case incline (or decline) conveyors. Has excellent impact resistance as well as good chemical resistance.

Primary Components

High strength, impact modified composite with high friction pads

General Information

Prefix	Material	Temperature						FDA Approval
		Fahrenheit			Celsius			
		min	max		min	max		
			dry	wet		dry	wet	
GTC	Gray Tough Composite	0	+180	+140	-18	+82	+60	No

Friction Factors Between Material and Product

Operating Condition	Product Material						
	Aluminum	Returnable Glass Bottles	Non-Returnable Glass Bottles	Paper	Plastic (crates, shrink wrap, etc)	PET	Steel
Dry	NR	NR	NR	NR	NR	NR	NR
Water	NR	NR	NR	NR	NR	NR	NR
Soap and Water	NR	NR	NR	NR	NR	NR	NR
Oil	NR	NR	NR	0.87***	0.85***	NR	NR

Friction Factors Between Material and Wearstrips

Operating Condition	Wearstrip Material		
	Carbon and Stainless Steel	UHMWPE	Nylatron®
Dry	0.30	0.25	0.25
Water	0.23	0.21	0.21
Soap and Water	0.15	0.15	0.15
Oil	0.10	0.10	0.10

1. Not available for Rexnord® TableTop® and Multiflex chains.

Regulatory Information

***It is not recommended to accumulate on RubberTop® products; however, these values can be utilized when determining brake belt or "hold back" calculations.

NR denotes "not recommended", Dash denotes "combination not tested"

**Friction of returnable bottles will vary depending on the quality of the glass, the amount of roughed up surface, etc.

USP

Brief Description

USP is specifically formulated for chemically aggressive pasteurizer, warmer and cooler applications. USP offers advantages that include superior resistance to chemicals used in cleaning and boil-out as well as extended chain life in high-temperature environments. USP material remains stronger and more flexible than plain polypropylene in hot, oxidative environments such as pasteurizers or warmers/coolers. The end result is increased reliability throughout the entire life of the chain

Primary Components

Polypropylene (PP) + Chemical Stabilizers

General Information

Prefix	Material	Temperature						FDA Approval
		Fahrenheit			Celsius			
		min	max		min	max		
			dry	wet		dry	wet	
USP	Ultra Stabilized Polypropylene (Dark Green)	+40	+220	+212	+4	+104	+100	Yes

Friction Factors Between Material and Product

Operating Condition	Product Material						
	Aluminum	Returnable Glass Bottles**	Non-Returnable Glass Bottles	Paper	Plastic (crates, shrink wrap, etc)	PET	Steel
Dry	0.29	0.29	0.24	0.35	0.32	0.28	0.31
Water	0.19	0.21	0.18	NR	0.24	0.20	0.25
Soap and Water	0.15	0.14	0.10	NR	0.19	0.15	0.17
Oil	---	---	---	NR	---	---	0.10

Friction Factors Between Material and Wearstrips

Operating Condition	Wearstrip Material		
	Carbon and Stainless Steel	UHMWPE	Nylatron®
Dry	0.35	0.30	0.30
Water	0.30	0.25	0.25
Soap and Water	0.25	0.20	0.20
Oil	0.10	0.10	0.10

Regulatory Information

The Food and Drug Administration (FDA) accepts certain materials for direct food contact. FDA approved material is compliant to FDA 21 CFR § 177.

Nylatron is a registered trademark of Quadrant Engineering Plastics Products.

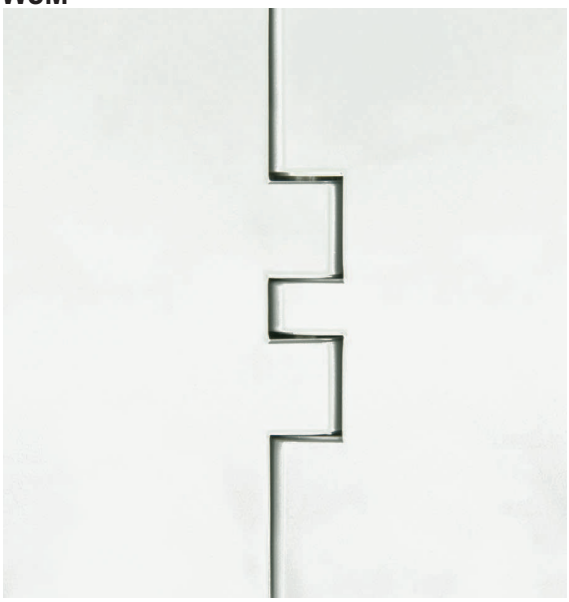
1. Buoyant in water.
2. Not available for Rexnord® TableTop® and Multiflex chains.

NR denotes "not recommended", Dash denotes "combination not tested"

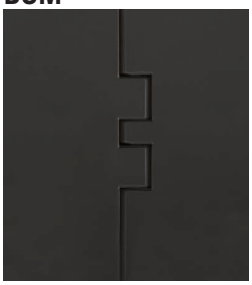
**Friction of returnable bottles will vary depending on the quality of the glass, the amount of roughed up surface, etc.

Materials

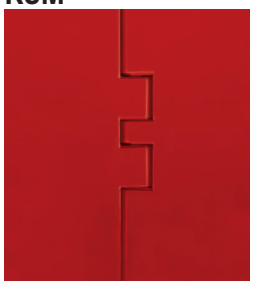
WSM



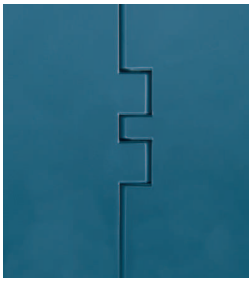
BSM



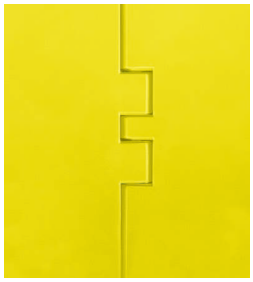
RSM



SMB



YSM



Brief Description

Formulated to be used in applications when superior wear and cut resistance is required. Can be used in both dry and wet conditions and in applications where abrasive wear due to products or environment is a concern. Cut resistant materials are commonly used in the meat processing industry on cutting, boning and trimming lines. Has good impact resistance and is as strong as standard acetal materials.

Primary Components

Cut and abrasive wear resistant acetal (POM)

General Information

Prefix	Material	Temperature						FDA Approval
		Fahrenheit			Celsius			
		min	max		min	max		
			dry	wet		dry	wet	
WSM	White Cut Resistant	-40	+180	+150	-40	+82	+66	Yes
BSM	Black Cut Resistant	-40	+180	+150	-40	+82	+66	Yes
SMB	Blue Cut Resistant	-40	+180	+150	-40	+82	+66	Yes
RSM	Red Cut Resistant	-40	+180	+150	-40	+82	+66	Yes
YSM	Yellow Cut Resistant	-40	+180	+150	-40	+82	+66	Yes

Friction Factors Between Material and Product

Operating Condition	Product Material						
	Aluminum	Returnable Glass Bottles**	Non-Returnable Glass Bottles	Paper	Plastic (crates, shrink wrap, etc)	PET	Steel
Dry	0.25	0.27	0.20	0.33	0.25	0.25	0.30
Water	0.17	0.18	0.15	NR	0.20	0.20	0.22
Soap and Water	0.12	0.14	0.10	NR	0.15	0.15	0.15
Oil	---	---	---	NR	---	---	0.10

Friction Factors Between Material and Wearstrips

Operating Condition	Wearstrip Material		
	Carbon and Stainless Steel	UHMWPE	Nylatron®
Dry	0.30	0.25	0.25
Water	0.23	0.21	0.21
Soap and Water	0.15	0.15	0.15
Oil	0.10	0.10	0.10

Regulatory Information

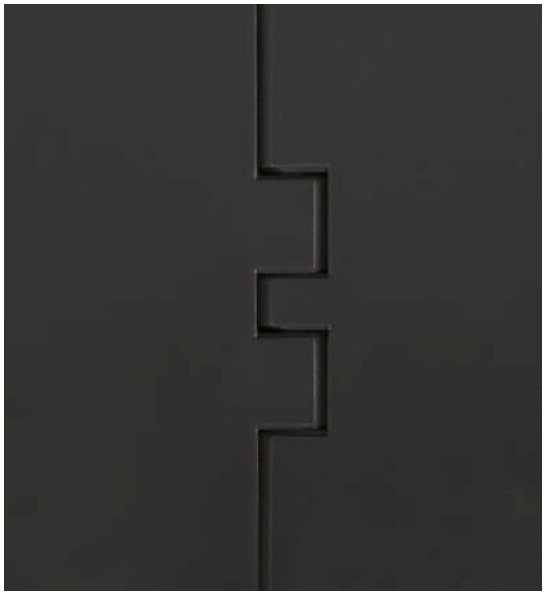
The Food and Drug Administration (FDA) accepts certain materials for direct food contact. FDA approved material is compliant to FDA 21 CFR § 177.

Nylatron is a registered trademark of Quadrant Engineering Plastics Products.

NR denotes "not recommended", Dash denotes "combination not tested"

**Friction of returnable bottles will vary depending on the quality of the glass, the amount of roughed up surface, etc.

BWX



Brief Description

Formulated to be used in abrasive applications where chain is subjected to abrasives such as glass, sand and dirt. May extend chain wear life up to five times compared to acetal materials. Designed to be used in glass handing applications where abrasive shards of glass can wear other plastic chain materials rapidly. Can also be used in other abrasive applications.

Primary Components

Abrasion resistant nylon (PA)

General Information

Prefix	Material	Temperature						FDA Approval
		Fahrenheit			Celsius			
		min	max		min	max		
			dry	wet		dry	wet	
BWX	Black Abrasion Resistant Polyamide	-40	+220	NR	-40	+104	NR	No

Friction Factors Between Material and Product

Operating Condition	Product Material						
	Aluminum	Returnable Glass Bottles**	Non-Returnable Glass Bottles	Paper	Plastic (crates, shrink wrap, etc)	PET	Steel
Dry	0.25	0.27	0.20	0.33	0.25	0.25	0.30
Water	NR	NR	NR	NR	NR	NR	NR
Soap and Water	NR	NR	NR	NR	NR	NR	NR
Oil	---	---	---	NR	---	---	---

Friction Factors Between Material and Wearstrips

Operating Condition	Wearstrip Material		
	Carbon and Stainless Steel	UHMWPE	Nylatron®
Dry	0.30	0.25	0.25
Water	NR	NR	NR
Soap and Water	NR	NR	NR
Oil	NA	NA	NA

1. It is important to lubricate side-flexing chains in the corners to reduce noise levels at speeds in excess of 60 FPM; however water lubrication is unacceptable because it will cause wear resistant material to swell and lose strength.

Regulatory Information

NR denotes "not recommended", Dash denotes "combination not tested"

**Friction of returnable bottles will vary depending on the quality of the glass, the amount of roughed up surface, etc.

Materials

XLA

Brief Description

Internally lubricated, extra low friction acetal for improved wearlife and high strength.

Primary Components

Internally lubricated acetal (POM)

General Information

Prefix	Material	Temperature						FDA Approval
		Fahrenheit			Celsius			
		min	max		min	max		
			dry	wet		dry	wet	
XLA	Internally Lubricated Polyacetal (Grey)	-40	+180	+150	-40	+82	+66	Yes

Friction Factors Between Material and Product

Operating Condition	Product Material						
	Aluminum	Returnable Glass Bottles**	Non-Returnable Glass Bottles	Paper	Plastic (crates, shrink wrap, etc)	PET	Steel
Dry	0.20	0.20	0.15	0.30	0.20	0.20	0.25
Water	0.15	0.18	0.13	NR	0.18	0.18	0.20
Soap and Water	0.12	0.14	0.10	NR	0.15	0.15	0.15
Oil	---	---	---	NR	---	---	0.10

Friction Factors Between Material and Wearstrips

Operating Condition	Wearstrip Material		
	Carbon and Stainless Steel	UHMWPE	Nylatron®
Dry	0.25	0.20	0.20
Water	0.20	0.18	0.18
Soap and Water	0.15	0.15	0.15
Oil	0.10	0.10	0.10

1. Used for Low Backline Pressure (LBP) chains

Regulatory Information

The Food and Drug Administration (FDA) accepts certain materials for direct food contact. FDA approved material is compliant to FDA 21 CFR § 177.

NR denotes "not recommended", Dash denotes "combination not tested"

**Friction of returnable bottles will vary depending on the quality of the glass, the amount of roughed up surface, etc.

XLG

Brief Description

Internally lubricated, extra low friction acetal for improved wear life and high strength.

Primary Components

Internally lubricated acetal (POM)

General Information

Prefix	Material	Temperature						FDA Approval
		Fahrenheit			Celsius			
		min	max		min	max		
			dry	wet		dry	wet	
XLG	Low Friction Acetal (Green)	-40	+180	+150	-40	+82	+66	Yes

Friction Factors Between Material and Product

Operating Condition	Product Material						
	Aluminum	Returnable Glass Bottles**	Non-Returnable Glass Bottles	Paper	Plastic (crates, shrink wrap, etc)	PET	Steel
Dry	0.20	0.20	0.15	0.30	0.20	0.20	0.25
Water	0.15	0.18	0.13	NR	0.18	0.18	0.20
Soap and Water	0.12	0.14	0.10	NR	0.15	0.15	0.15
Oil	---	---	---	NR	---	---	0.10

Friction Factors Between Material and Wearstrips

Operating Condition	Wearstrip Material		
	Carbon and Stainless Steel	UHMWPE	Nylatron®
Dry	0.25	0.20	0.20
Water	0.20	0.18	0.18
Soap and Water	0.15	0.15	0.15
Oil	0.10	0.10	0.10

1. Only available in MCC® TableTop® and MatTop® chains

Regulatory Information

The Food and Drug Administration (FDA) accepts certain materials for direct food contact. FDA approved material is compliant to FDA 21 CFR § 177.

NR denotes "not recommended", Dash denotes "combination not tested"

**Friction of returnable bottles will vary depending on the quality of the glass, the amount of roughed up surface, etc.

Materials

HCAS

Brief Description

Proprietary acetal material that combines good wear resistance, strength, and low friction characteristics with anti-static properties. It is formulated to reduce or eliminate nuisance static buildup that can occur while conveying heavy products or during product accumulation. Also used to dissipate nuisance sparks for class II type static environments only. Please contact Application Engineering at 262.376.4800 for specific uses for this material.

Primary Components

High capacity anti-static acetal (POM)

General Information

Prefix	Material	Temperature						FDA Approval
		Fahrenheit			Celsius			
		min	max		min	max		
			dry	wet		dry	wet	
HCAS	High Capacity Anti-static (Black)	0	+180	+150	-18	+82	+66	No

Friction Factors Between Material and Product

Operating Condition	Product Material						
	Aluminum	Returnable Glass Bottles**	Non-Returnable Glass Bottles	Paper	Plastic (crates, shrink wrap, etc)	PET	Steel
Dry	0.25	0.27	0.20	0.33	0.25	0.25	0.30
Water	NR	NR	NR	NR	NR	NR	NR
Soap and Water	NR	NR	NR	NR	NR	NR	NR
Oil	NR	NR	NR	NR	NR	NR	NR

Friction Factors Between Material and Wearstrips

Operating Condition	Wearstrip Material		
	Carbon and Stainless Steel	UHMWPE	Nylatron®
Dry	0.30	0.25	0.25
Water	NR	NR	NR
Soap and Water	NR	NR	NR
Oil	NR	0.16	0.16

Regulatory Information

1. Types of Static Environments:
   Class I: Static spark causes explosion. Use stainless steel materials.
   Class II: Static spark is a nuisance charge causing slight shock, possible circuit damage or electrical malfunction
2. Electrical properties: surface resistivity $=10^{11}$ - 10^{13} Ω/sq.
3. HCAS is Teflon® and is silicone free.
4. Wearstrip Recommendations:
   Wearstrips must be grounded to the conveyor frame and must be electrical conductive to be effective. The conveyor frame should also be externally grounded.
5. Strength considerations:
   Rexnord MatTop® chains molded from HCAS material must be derated 15% from their acetal (BSM) counterparts.
6. Depending on application requirements, the entire conveyer chain can be compromised of anti-static material or sections of anti-static material can be interspersed at various intervals.
7. HCAS friction factor should be used when interspersing HCAS links into any other MatTop® material.

NR denotes "not recommended", Dash denotes "combination not tested"

**Friction of returnable bottles will vary depending on the quality of the glass, the amount of roughed up surface, etc.

FR-ESD

Brief Description

Proprietary material that combines good wear resistance, strength, and low friction characteristics with electrostatic dissipative and flame retardant properties. It is formulated for conveying heavy, sensitive products that contain electronics or computer chips, where controlling static charge and static decay are of critical importance. Meets the ESD Association Draft Standard SD 4.1 - 1995. Used to dissipate static charges that can occur while conveying products or during product accumulation. Also used to dissipate nuisance sparks for class II type static environments only. Meets the DIN4102-1 B1 flame retardant criteria for construction materials. Please contact Application Engineering at 262.376.4800 for specific uses for this material.

Primary Components

High capacity electrostatic dissipative acetal (POM)

General Information

Prefix	Material	Temperature						FDA Approval
		Fahrenheit			Celsius			
		min	max		min	max		
			dry	wet		dry	wet	
FR-ESD	Flame Retardant Electrostatic Dissipative (Black)	0	+180	NR	-18	+82	NR	No

Friction Factors Between Material and Product

Operating Condition	Product Material						
	Aluminum	Returnable Glass Bottles**	Non-Returnable Glass Bottles	Paper	Plastic (crates, shrink wrap, etc)	PET	Steel
Dry	0.25	0.27	0.20	0.33	0.25	0.25	0.30
Water	NR	NR	NR	NR	NR	NR	NR
Soap and Water	NR	NR	NR	NR	NR	NR	NR
Oil	NR	NR	NR	NR	NR	NR	NR

Friction Factors Between Material and Wearstrips

Operating Condition	Wearstrip Material		
	Carbon and Stainless Steel	UHMWPE	Nylatron®
Dry	0.30	0.25	0.25
Water	NR	NR	NR
Soap and Water	NR	NR	NR
Oil	NR	0.16	0.16

Regulatory Information

1. Types of Static Environments:
   Class I: Static spark causes explosion. Use stainless steel materials.
   Class II: Static spark is a nuisance charge causing slight shock, possible circuit damage or electrical malfunction
2. Electrical properties: surface resistivity =10^{11} - 10^{13} Ω/sq.
3. FR-ESD is Teflon® and is silicone free.
4. Wearstrip Recommendations:
   Wearstrips must be grounded to the conveyor frame and must be electrical conductive to be effective. The conveyor frame should also be externally grounded.
5. Strength considerations:
   Rexnord MatTop® molded from FR-ESD material must be derated 40% from their acetal (BSM) counterparts.
6. Actual dimensions of FR-ESD MatTop® chains will differ +1.5% to +1.8% from nominal dimensions.

NR denotes "not recommended", Dash denotes "combination not tested"

**Friction of returnable bottles will vary depending on the quality of the glass, the amount of roughed up surface, etc.

Chemical Table

REXNORD

Engineering Manual Chemical Resistance List

Resistance against chemical agents	POLYAMIDE PA		POLYPROPYLENE PP		POLYETHYLENE PE		ACETAL POM		AISI 303 AISI 304		AISI 316		NICKEL PLATED BRASS		NBR RUBBER		VITON RUBBER	
CHEMICAL AGENT	Conc.%	23°C	Conc.%	23°C	Conc.%	23°C	Conc.%	23°C	Conc.%	23°C	Conc.%	23°C	Conc.%	23°C	Conc.%	23°C	Conc.%	23°C
ACETIC ACID	10	–	40	+	10	+	5	-	20	+	50	+		/		–	20	–
ACETONE	100	+		+		+		/	50	+	25	+		+		–		–
ALUMINIUM CHLORIDE	10	+								–		/				+	Sat.	+
AMMONIA	10	+	30	+		+	Sol.	+	50	+	100	+		–		/		/
AMMONIA CONC.		+		+		+		-								–		
AMMONIUM CHLORIDE	10	+							10	/		/				+	Sat.	+
AMYL ALCOHOL	100	+		+						+		+						+
ANILINE		/	100	+	3	+	3	+	3	+						–		
BEER		+		+		+		+		+				+		+		+
BENZENE		+		+		/		+	70	/						–		
BENZOIC ACID	Sat.	/	Sat.	+					100	/	100	+				+		+
BENZOL	100	+		/		/		+		+		+		+		–		/
BORIC ACID	10	+	Sat.	+	Sat.	+		+	100	/	Sat.	+				+	Sat.	+
BRINE		/	Sat.	+		+		/								+		
BUTTER		+		+		+		+		+				+		+		+
BUTYL ALCOHOL	100	+		+						+		+				/		+
BUTYRIC ACID		–	100	+		+		-	5	+						–		
CALCIUM CHLORIDE	10	+	50	+	Sat.	+		/	10	–		/		+		+	Sat.	+
CARBON SULPHIDE	100	+		+		+		+		+		+				–		+
CARBON		+		–		/		+	10	–		+		+		–		+
CAUSTIC SODA	10	+	52	+	25	+	25	-		+						/	45	+
CHEESE		–		+		+		+								+		
CHLORINATED WATER		+		–		-		-		–						–		
CHLOROFORM	100	–		/		-		-	100	+		+		+		–		+
CHOCOLATE		–				+		+								+		
CITRIC ACID	10	/	10	+		+		/	5	+	25	+		–		+	Sat.	+
CUPRIC SULPHATE	10	+	Sat.	+		+		+	5	+	100	+				+	Sat.	+
DISTILLED WATER		+		+		+		+		+						+		
ETHYL ACETATE	100	+		+					100	/						–		–
ETHYL ALCOHOL	96	+	96	+		+		+	10	+		+		+		/		+
ETHYL CHLORIDE	100	+		–		/		+		+		/		/		–		
ETHYL ETHER	100	+		+		+		+								–		–
FERRIC CHLORIDE	10	+		+					20	–		/				+	Sat.	+
FOOD FATS		+		+		+		+		+						+		+
FOOD OILS		+		+		+		+		+						+		+
FORMALDEHYDE	30	+	40	+		/		+	100	+				+		–	40	+
FORMIC ACID	10	–	100	+	10	+	10	-	5	/				+		–		
FREON 12		+								+						+		/
FRESH WATER		+		+		+		+		+				+		+		
FRUIT JUICES		+		+		+		+		+						+		
GASOLINE		+		/		/		+		+		+		/		/		+
GLYCERINE		+		+		+		+		+		+		+		+		+
HYDROCHLORIC ACID	10	–	30	+	37	+	37	-		–	1	+		/	10	/	37	+
HYDROCHLORIC ACID	2	–	2	+	2	+	2	/							2	/		
HYDROFLUORIC ACID	40	–	40	+	70	+		-		–					65	–	48	+
HYDROGEN PEROXIDE	3	–	30	+		+		-	30	+		+		/	80	–	90	+
IODINE		–		+		+		+								/		
LACTIC ACID	10	+	20	+		+		+	5	+	10	+		–		+		+
LINSEED OIL		+		+					100	+		+				+		+
MAGNESIUM CHLORIDE	10	+	Sat.	+					5	+		/				+	Sat.	+
MERCURY		+	100	+		+		+	100	/		+		/		+		+
METHYL ALCOHOL	100	+		+		+		+	100	/		+		+		/		/
METHYLENE CHLORIDE	100	+		/		/		-		/		/				–		/
MILK		+		+		+		+		+				+		+		+
MINERAL OILS		+		+		+		+		+		+				+		+
MUSTARD		–		+		+		+								+		
NITRIC ACID	10	–		+	5	/	5	-	10	+	65	+			10	–	70	+
OLEIC ACID	100	+		+		/		-	100	/				+		/		/
PARAFFIN		+	100	/		+		+		+						+		
PETROLEUM		+	100	/		-		+		+				+		+		+
PETROLEUM ETHER		+		+		+		+		+		+		+		–		

Chemical Table

Resistance against chemical agents CHEMICAL AGENT	POLYAMIDE PA Conc.% 23°C		POLYPROPYLENE PP Conc.% 23°C		POLYETHYLENE PE Conc.% 23°C		ACETAL POM Conc.% 23°C		AISI 303 AISI 304 Conc.% 23°C		AISI 316 Conc.% 23°C		NICKEL PLATED BRASS Conc.% 23°C		NBR RUBBER Conc.% 23°C		VITON RUBBER Conc.% 23°C	
PHENOL		–		+					10	+		+				–		+
PHOSFORIC ACID	10	–	85	+	95	+	10	-	10	–	50	/		–	20	/	85	+
POTASSIUM	10	+							50	+	50	+				/		+
SEA WATER		+		+		+		/		+		+		+		+		+
SILICONE OIL		+		+												+		+
SILVER NITRATE		+	20	+					60	/						/		+
SOAP AND WATER		+		+		+		+		+						+		
SODIUM CARBONATE	10	+	Sat.	+		+		+	5	+	100	+				+		+
SODIUM CHLORIDE	10	+	Sat.	+		+		+	5	+		/		+		+	Sat.	+
SODIUM HYDROXIDE	10	+	30	+		+	10	+		–				+		/		
SODIUM		+	20	+		+		-		–						–	5	+
SODIUM SILICATE		+							100	+	100	+				+		
SODIUM SULPHATE	10	+	Sat.	+		+		+	5	+	100	+				+		+
SOFT DRINKS		+		+		+		+		+				+		+		
SUDS		+		+												+		+
SULPHURIC ACID	10	–	98	+	40	/	40	-	10	–	100	+		+		–	95	+
TARTARIC ACID		+	10	+		+	30	/	10	+	50	+		–		+		+
TETRALINE		+		–												–		+
TINCTURE OF IODINE		–		+		+		+						–		/		
TRANSFORMER OIL		+		/												+		+
TRICHLORETHYLENE		/		/		+		-		+				+		–		+
TURPENTINE		/		–		-		-		+						–		
VASELINE		+		+		/		+								+		+
VEGETABLE JUICES		+		+		+		+		+						+		
VEGETABLE OILS		+		+		+		+		+						+		
VINEGAR		+		+		+		+		+				+		/		–
WHISKY		+		+		+		+		+				+		+		+
WINE		+		+		+		+		+				+		+		+
XILOL		+		–		/		+		+				/		–		+
ZINC CHLORIDE	10	/	20	+					10	–		/				+	Sat.	+

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